PARTMENT TECHNO
O AND ERIE COUNTY PUBLIC

AUGUST 3, 1957
VOL. 153—NO. 5

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

HAIR DRYERS IN RESCUE

Hair dryers are used in attempt to save PBX equipment in basement of Chicago's Midway Airport flooded in storm. In foreground using dryer: Erwin Block; behind him, Gil Lindelsee. Both worked round-the-clock to save "their baby." Full story: TELEPHONY, July 27, p. 44.

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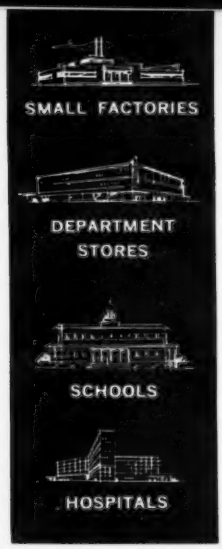


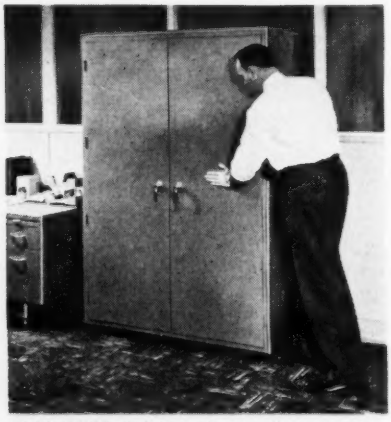
for these subscribers...

with these needs...

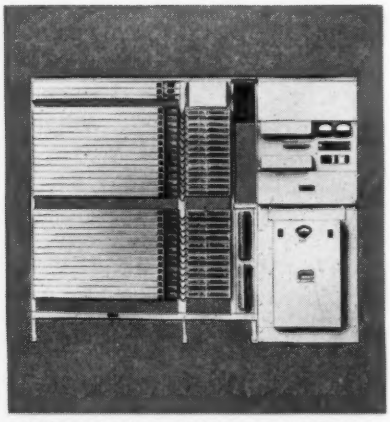
External communications

Internal communications

these XY® PBX's



F-40 PBX. Cabinet looks like a regular office wardrobe; can be rolled anywhere. Its dimensions are 6′ 4″ high, 4′ 1″ wide, 2′ deep.



F-80 PBX. All switching equipment is contained in a single compact bay. Its approximate dimensions are 6′ high, 7′ wide, 1′ deep.

XUM

Now you can sell attended PBX service to commercial subscribers who need a compact, internal dial system with central office connections—but lack the space for cumbersome bays and power supply.

The Stromberg-Carlson F-40 PBX offers a maximum capacity of 40 lines and 8 trunks, yet it takes only 8 square feet of floor space. You install it simply by connecting the telephone cable leads and plugging in the self-contained power supply to a standard 110-volt AC outlet.

The attendant's cabinet, about the size of an adding machine, uses keys for answering and completing calls. All stations are equipped with standard instruments.

For Larger Systems: the F-80

Subscribers who need more than 40 lines—but do not require a selector-type system—will find the XY F-80 PBX ideal. This system provides up to 80 lines, 14 talking paths, 10 central office trunks and 4 information trunks. It is wired for night answering service.

The F-80 offers single-party service, restricted and "executive-right-of-way" service, and conference and code call facilities. It is furnished with cord-type attendant's cabinet in smart, and modern styling.

With these Stromberg-Carlson PBX's you can give an additional lift to your commercial revenue. Phone or write your Stromberg-Carlson representative for descriptive literature and hard-hitting selling aids.

S-C STROMBERG-CARLSON

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A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

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FLASHES AND PLUGS

FROM THE HINTERLANDS. Ralph M. Hyle, president of the Lycoming Telephone Co., Pine Grove, Pa., has forwarded an application his company received for telephone service. It was addressed as follows:

"Sent to the TellaPhone Co.

"Dear Sir

"I am writing you a fue Lines to let you know that I would like to toak to you about putting the tellaPone In for me if you know where Mr. ——— ——— lives well I live In his house Next to his plase"

•

RIGHT CHURCH, WRONG PEW. A Salt Lake family had just sat down to dinner the other evening and the father was about to say grace when the telephone rang. He got up, went to the telephone and said reverently into the mouthpiece, "Our heavenly Father . . ."

•

EASY MONEY. A robber in New York City recently plied his trade by telephone, thereby accomplishing one of the easiest "stick-ups" in history, relates the *Chicago American*. He called up the clerk of a liquor store, said he'd be along in a minute to rob the place, and the clerk had better go into the back room. The clerk did. The robber did. He got $107 and the clerk never saw him, just heard the bell ring on the cash register.

This sets a record for effortless crime, comments the *American*. "We can't think of any way he could make his job easier unless he can make his telephone approach so terrifying that his victims will mail him the money out of their tills. That way he wouldn't have to go outdoors at all."

•

HEAVENLY EXPRESS. A minister in Wewoka, Okla., recently was delivering a Sunday sermon when he was interrupted by a mundane message:

"Calling Car Eleven. Calling Car Eleven."

A check showed that a quirk caused the church public address system to pick up police calls, reports the Associated Press.

•

FUJI UP-TO-DATE. There is something new atop Mt. Fuji—a switchboard and telephones. Beginning July 13, tourists who scale Japan's sacred mountain can call any place in the country from the 12,425-foot summit.

Twenty-six telephones were installed, operating over a radio-telephone circuit. The number for the top is Fuji summit zero.

CHANGE OF ADDRESS

Please notify your local postmaster and Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

August 3, 1957

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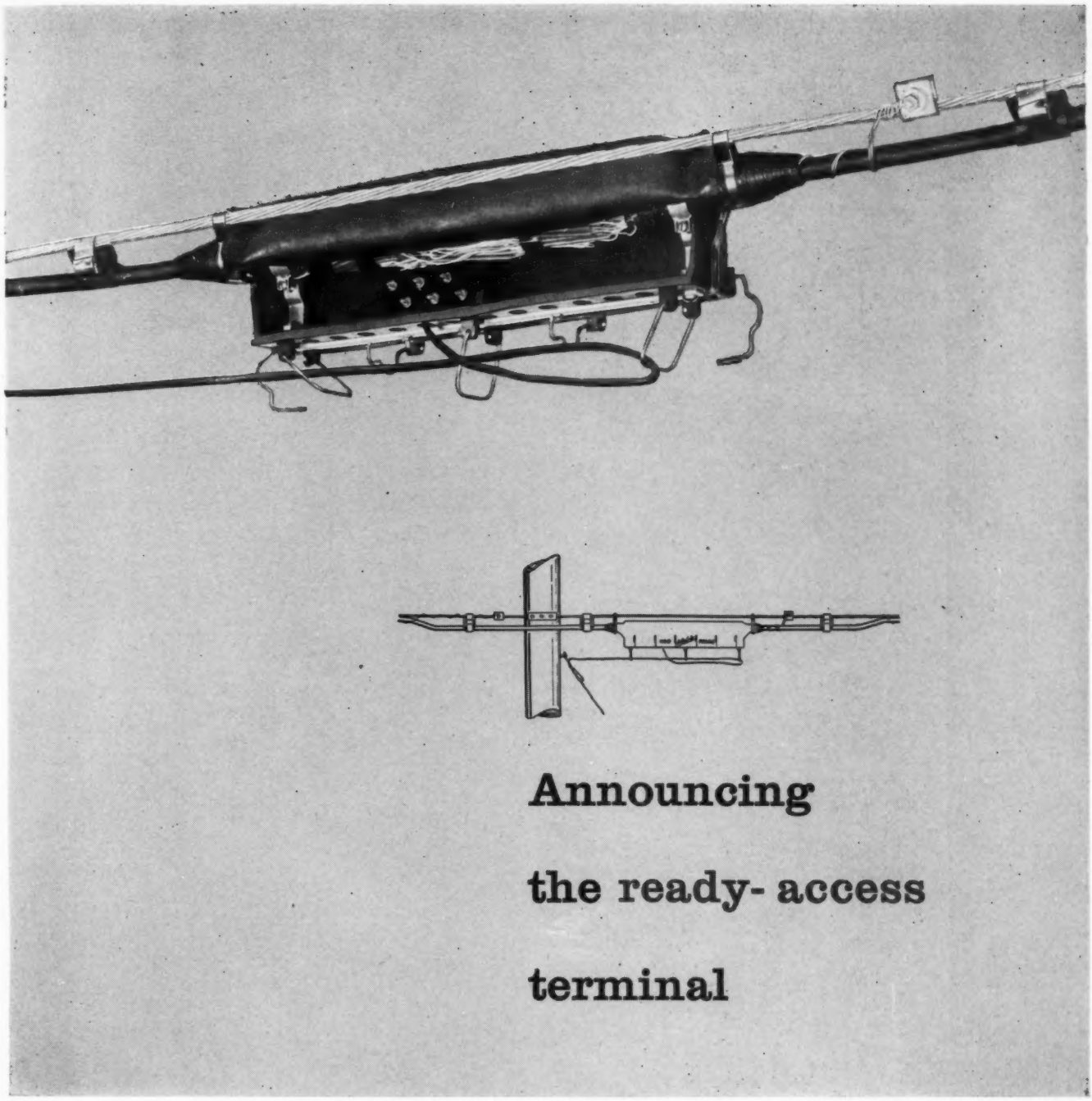

Announcing the ready-access terminal

This new ready-access terminal is first a straight splice for plastic-jacketed, plastic-insulated cable.

An installer-repairman or a cable splicer can add up to four, 6-pair, unprotected blocks or space may be used to include loading coils.

The flexible neoprene housing is workable below zero and is uneffected by summer sun. Good design and best quality throughout insures a long service life.

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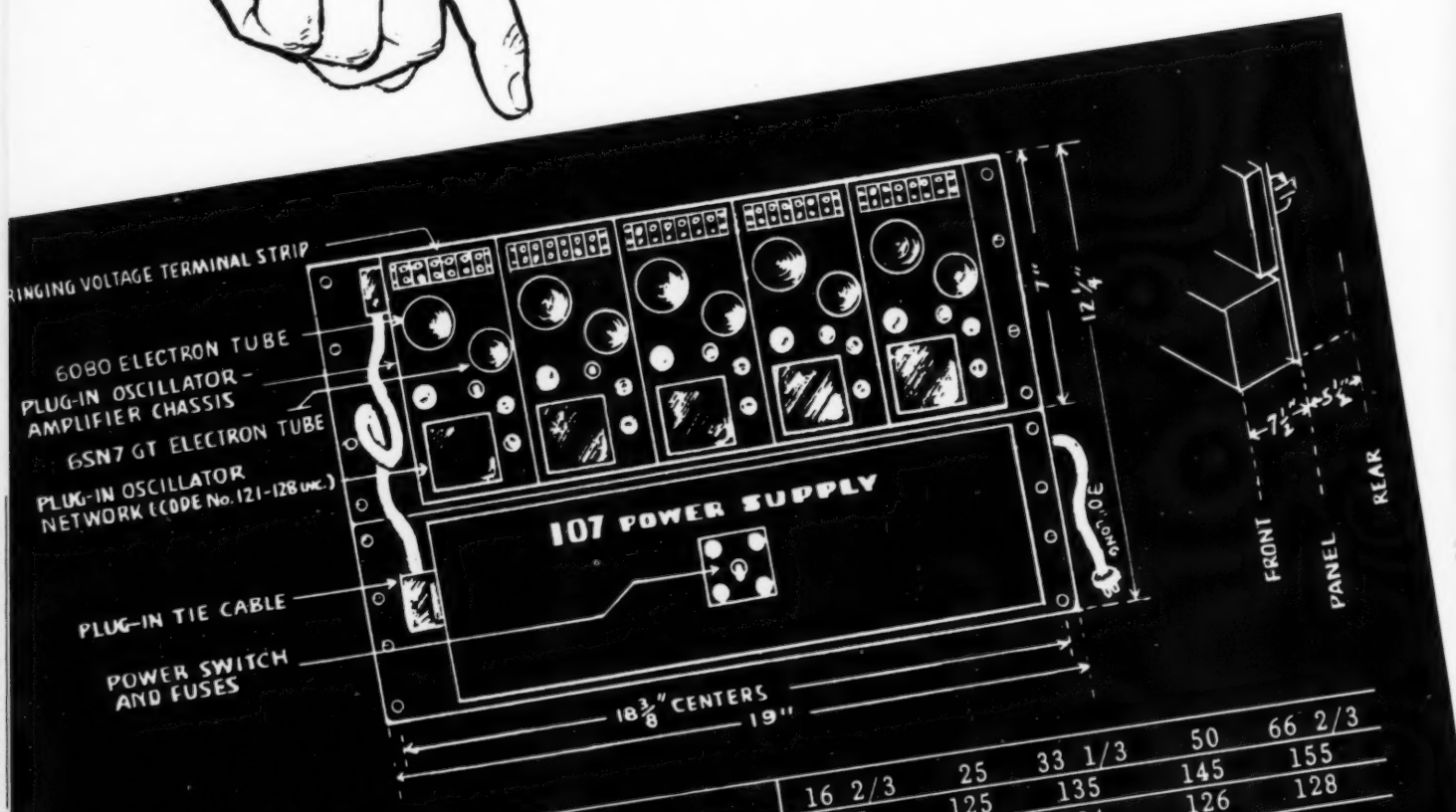
Modernizing? Cutting maintenance costs? Then..



Code No. 101 Harmonic	Frequency	16 2/3	25	33 1/3	50	66 2/3
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	121	123	124	126	128
Code No. 102 Synchromonic	Frequency	16	30	42	54	66
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	121	124	125	126	128
Code No. 103 Decimonic	Frequency	20	30	40	50	60
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net No.	122	124	125	126	127
Code No. 104 Special	Frequency	20	30	42	54	66
	*Nom. Ring. Volt.	105	125	135	145	155
	Osc. Net. No.	122	124	125	126	128

*Voltages adjustable from values indicated.

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look at the advantages of the

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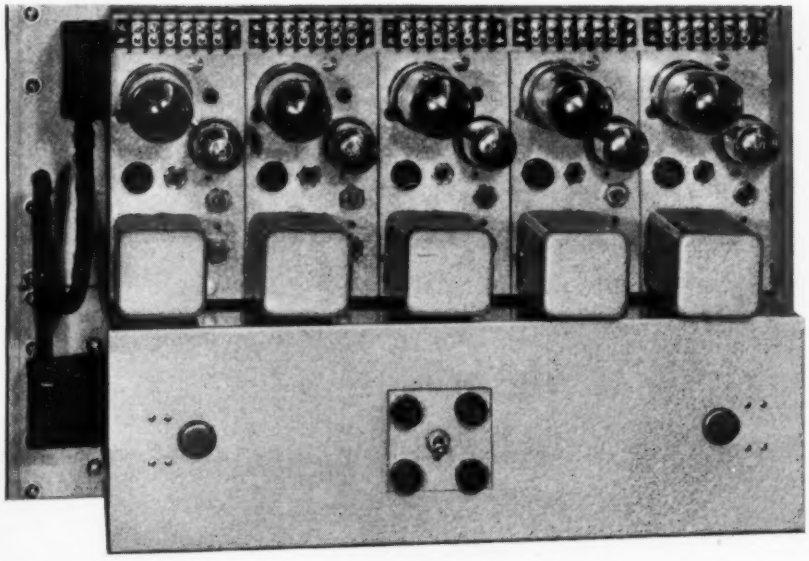

Write for your copy of the bulletin on the Kellogg Electronic Ringing Generator, today!

More and more independent telephone companies are adopting the Kellogg Electronic Ringing Generator as standard equipment. Here are a few of the many reasons:

- **LESS MAINTENANCE** . . . No moving parts . . . no contacts to clean or replace. Plug-in components . . . not damaged by shorted lines . . . experience proves tube life normally exceeds 18 months.
- **NO CROSS-RING PROBLEMS** . . . Extreme frequency stability . . . precise, easily adjustable frequencies.
- **FLEXIBILITY** . . . Provides any combination of 5 or fewer ringing frequencies. All ringing frequencies are independent of each other and/or frequency of power source.
- **EFFICIENT** . . . All frequencies continuously available . . . furnishes enough power for 1000 or more lines.
- **COMPACT** . . . Mounts on standard 19" relay rack . . . requires only 12¼" of vertical space.

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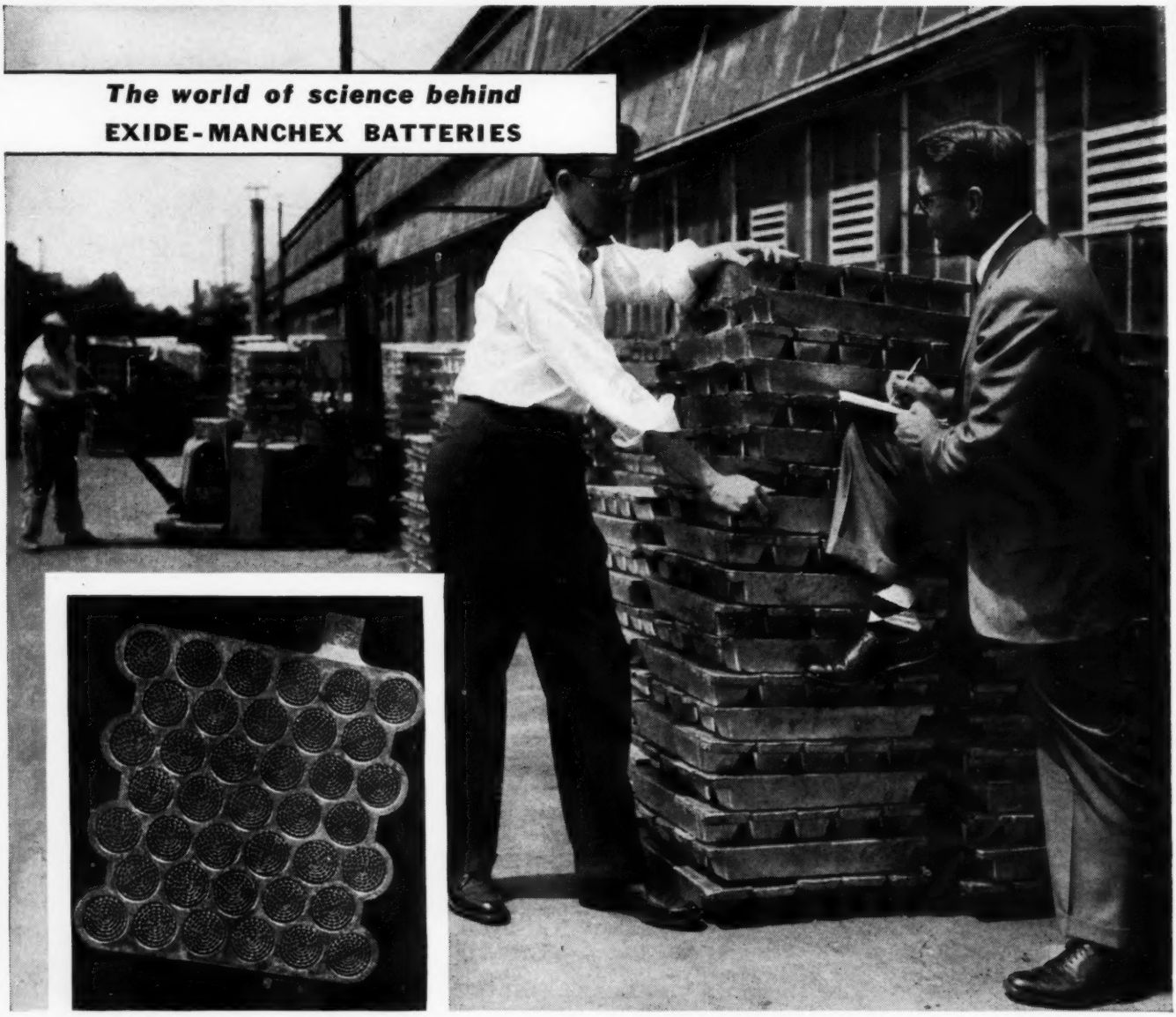
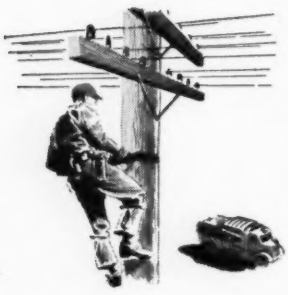
The world of science behind
EXIDE-MANCHEX BATTERIES



Being interviewed is J. P. Malloy, Chief Control Engineer. Shown at lower left is a positive plate from an Exide-Manchex Battery.

"High purity lead prolongs battery dependability"

At the Exide Laboratories—**Reporter:** Just exactly how pure is the lead in Exide-Manchex positive plate buttons, Mr. Malloy?



Malloy: There is less than one-hundredth of 1% active impurity.

Reporter: How do you insure and maintain such a high degree of purity?

Malloy: We test every new batch of lead here in our laboratory before we approve it for use.

Reporter: How does this high purity lead extend battery dependability?

Malloy: It converts to active material at the proper rate. Over years of use, these Exide-Manchex Batteries retain their capacity to provide full power when needed.

Reporter: Obviously, this is an important feature of Exide-Manchex Batteries.

Malloy: Yes it is. But it's only one of the many engineering details that contribute to their long life and high performance.

Note to battery users: Whenever you order batteries for float or cycle service in stationary applications, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Phila. 2, Pa.

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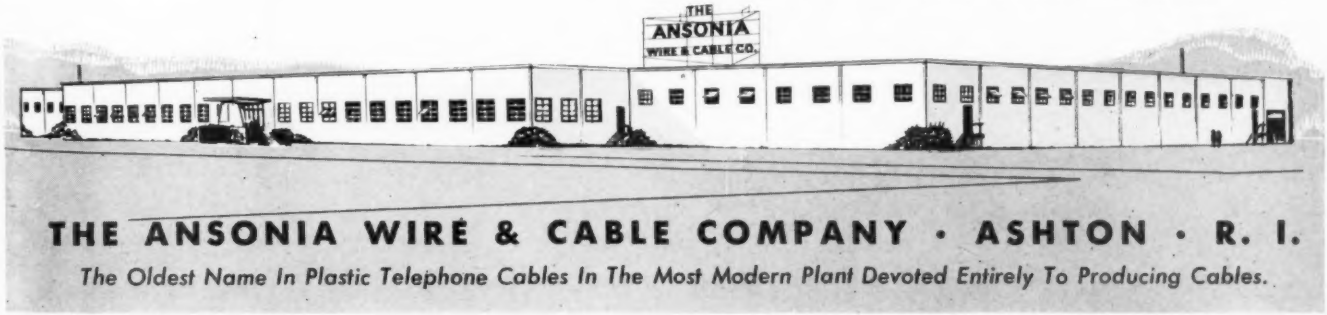
BUILT UP TO QUALITY
NOT DOWN TO PRICE

INDEPENDENT

Complete information and samples on request



THE ANSONIA WIRE & CABLE COMPANY · ASHTON · R. I.

The Oldest Name In Plastic Telephone Cables In The Most Modern Plant Devoted Entirely To Producing Cables.

...did you see this news about small manual exchanges?

TROUBLE CLEARING

Facts & Fallacies About Magneto Service

By L. N. MARTIN

WHY SHOULD we be writing about the magneto telephone at the present time? Many magneto exchanges are still in service. On Jan. 1, 1956, Independent telephone companies had approximately 4800 magneto exchanges. That was about 44 per cent of the total of Independent exchanges, including the large city exchanges. Magneto boards are now found only in small offices, with one-position boards predominating. If we should compare the number of magneto exchanges to the total number of *small* exchanges, this percentage would probably run much higher.

Now, even if we grant that the last of these exchanges will have disappeared from the scene within the next few years, each one must be maintained during the remainder of its life.

Each magneto exchange is very important to the community it serves. It furnishes the *only* telephone service these people have and they are entitled to the best service the company can furnish.

Good service is also *good* business for a company. It attracts new customers, more toll business, and more auxiliary business, such as extension telephones, hence revenues are increased.

Where public opinion is forcing a small company to convert to automatic operation, before it is ready to take that step, the public reaction has probably been generated by *poor* magneto service. Unless that company mends its ways the service will continue to be poor and its public relations will not improve no matter what kind of a switchboard they install.

The owner of a magneto exchange should understand that he *can* give good service with his present plant. He should know that many of the derogatory statements made about magneto service are untrue.

On the other hand, he should be acquainted with the real shortcomings and limitations of the magneto system and try to offset them whenever possible.

PART 55. The preceding article in this series appeared on page 28 of the Feb. 16 issue.

The popular opinion is that magneto lines are always noisy, crosstalk is prevalent, and transmission is poor. Now, a telephone man should know that these conditions are in the outside plant and have nothing to do with the magneto switchboard or the magneto telephones.

This trouble would actually become worse if the plant were cut over to automatic without correcting the outside plant conditions.

The first step in an automatic cutover is to thoroughly overhaul the outside plant. If that must be done before a cut-over, why not do it *now* and give *good* magneto service in the meantime.

Transmission over a magneto line is just as good and sometimes better than that over an equal common battery line. We must remember that toll lines are like magneto lines in that they carry no battery current. However, the dry cells in the magneto telephone must be in good condition to attain good transmission.

The magneto switchboard requires a human operator. One fault of the magneto system is that the operator does not get a disconnect signal when the subscriber hangs up. To give good service she must "listen in" on all connections at frequent intervals and "challenge" if she does not hear a conversation. Now, this is no excuse for poor service. The operator must be trained in magneto operation and she cannot be expected to handle as many lines as she would on a common battery board.

The automatic board substitutes a mechanical operator for a human operator. There are arguments in favor of each. When an operator makes a human mistake, such as ringing a wrong number, we may wish for a mechanical operator.

However, the automatic board does not eliminate wrong numbers. It merely transfers the chance for a human error from a trained operator to an untrained subscriber. (Note: "Wrong number" and similar reports increase after a cut-over to automatic. They decrease again in time but are never eliminated.)

On the other hand, when some emergency comes up, we may wish for the prompt and effective action of an intelligent human operator. Every few days we read in the papers how a courageous and quick thinking operator has saved life and property. Some of these women receive medals and other awards for their acts. However, so far as we can learn, no medal has yet been awarded to an automatic switchboard.

Now, the foregoing discussion of operators is not intended to prove anything. However, it does remind us of the old saying, "You can't eat your cake and have it, too."

Some small exchanges have trouble obtaining suitable operators. One company, with which we are well acquainted, is converting to automatic solely because it cannot obtain operators in its community. On the other hand, [illegible] which have no trouble in getting excellent operators at reasonable wages.

If, someday, the federal wage-hour law is changed to eliminate the present 750-station exchange operator exemption, many small companies operating manual exchanges will be in hot water. If they were forced to pay the minimum wage rate to operators, on a 24-hour basis, their operators' wages would exceed their gross revenues.

We are not prepared to discuss the [illegible] in the present article. However, in the final analysis small companies must give their subscribers good telephone service and the companies must earn a reasonable return on their investment.

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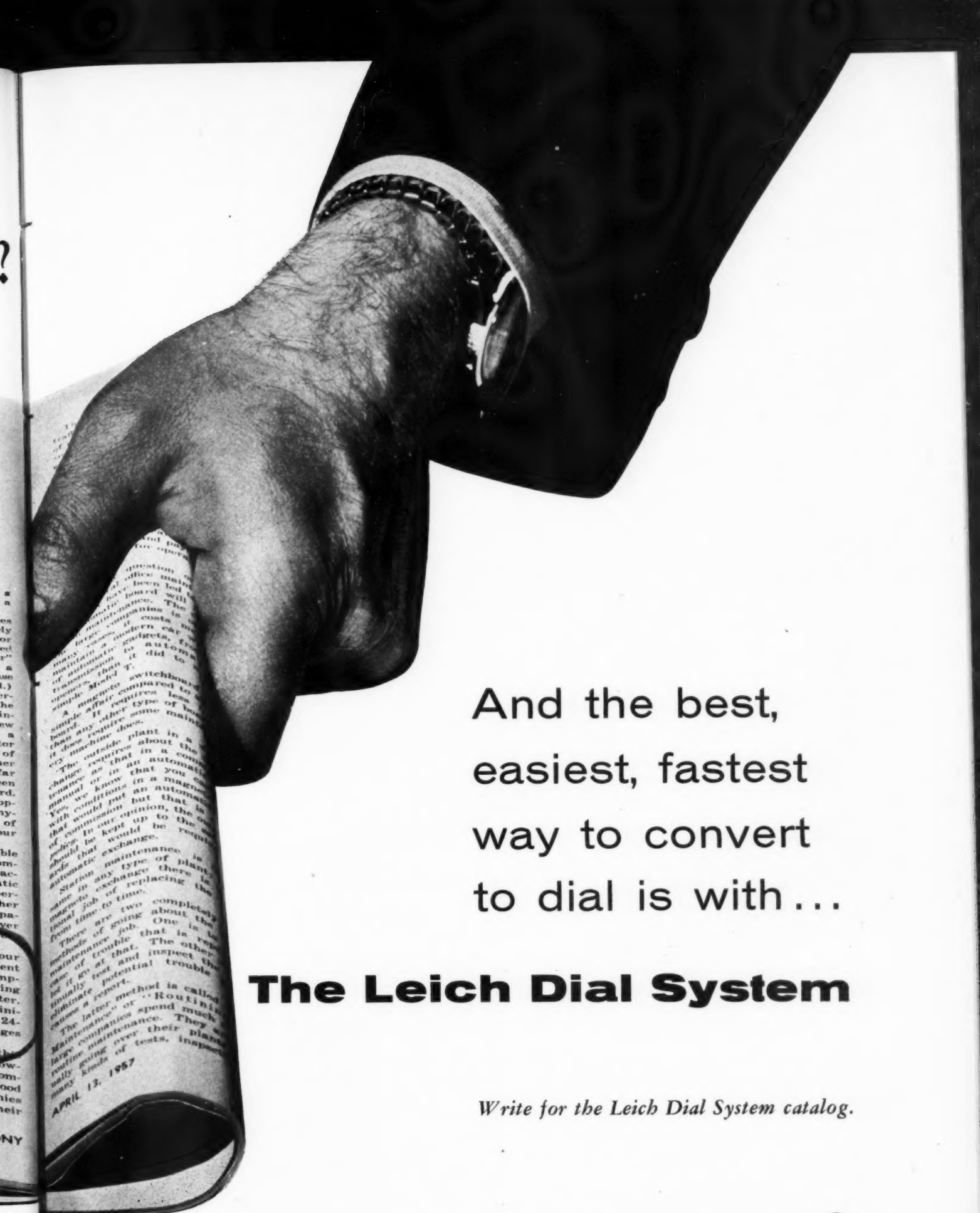

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Clerical accuracy and productivity are increased as the fatigue of pulling, closing or struggling with overloaded file drawers is eliminated. Any number of clerks can use the same filing section at the same time without interference to each other. Open Shelf Files can be placed right near the clerks using them and can serve as effective partitions between departments. The illustration (right) shows an Open Shelf Filing installation at an operating telephone company in Los Angeles, Cal.

For more detailed information on how Open Shelf Filing can cut your filing costs while increasing filing efficiency, write to Room 1842, 315 Fourth Avenue, New York 10, N. Y.

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For all aerial and duct use. Meets REA Spec. PE 14. 6 to 909 prs. 24 and 22 ga. 6 to 404 pr. 19 ga. Quadded or composite.

TEL-CA

For aerial, duct or direct burial installation. Extra mechanical protection. 11 to 202 prs., 24, 22 and 19 ga. Quadded or composite.

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Available in pairs, quads and in composite with regular exchange area cables. Meets rigid electrical requirements needed for toll service. Conductors meet ASTM B-3.

RDC

For extension of service in rural areas where long runs are required. Color-coded. High strength steel support wire. 1-16 prs.

UDC

For short run installation where demand for service is high, low-cost construction is required. Self-supporting. Color-coded. 6 or 16 pr. 24 ga.

COMPOSITE

Complements of different gauges provided under one sheath to meet engineering requirements. Same high standards maintained.

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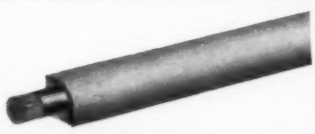
Inside wiring cable, multiple conductor paired. Fully color-coded for intercommunication, inside telephone, sound systems. Special vinyl jacket.

QRC

Quarter-round shaped jacket in choice six std. colors. For use in offices, hotels, etc., for intercommunicating and sound-systems. Up to 51 prs. Features neat, quick, easy installation.



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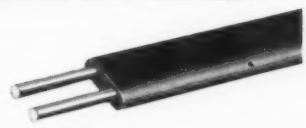
PLW .083S

.083 inch galvanized special steel wire conductors. Insulated in parallel with high molecular weight polyethylene. Self-supporting.

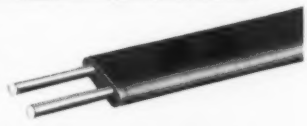
PLW 214 CW

14 gauge solid copperweld conductors. Same insulation as PLW .083S to meet very rigid electrical standards. Self-supporting.



PLW 212 CW

12 gauge solid copperweld conductors. Same insulation as PLW 214CW. Self-supporting. All PLW types for long drop runs at minimum cost.



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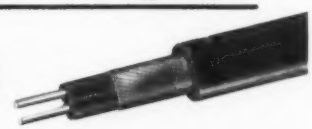

DB 217B

Direct burial wire, longitudinal bronze shield to resist damage from insects and rodents. Also use in areas conducive to lightning activity.

DB 217

Non-armored type wire for uses in areas where conditions are normal. All DB wire available with 17 or 16 ga. conductors.

"B" SERVICE WIRE

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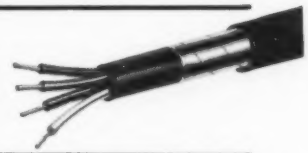

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Men with axes and machinery used to sweat out the job of keeping this right-of-way clear. And what they cut one year would be back waiting for the blade the next.

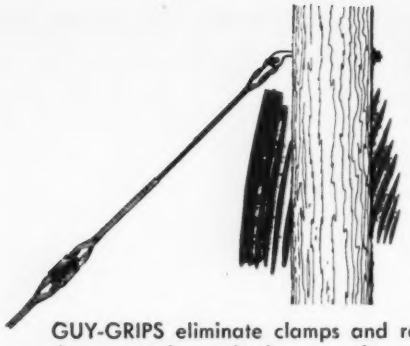
Now this trained crew keeps the way clear at half the cost . . . with Dow brush and weed killers. And their job

gets simpler all the time. After an initial treatment, it's just "touch-up and go" during following seasons because you get progressive control with Dow chemicals.

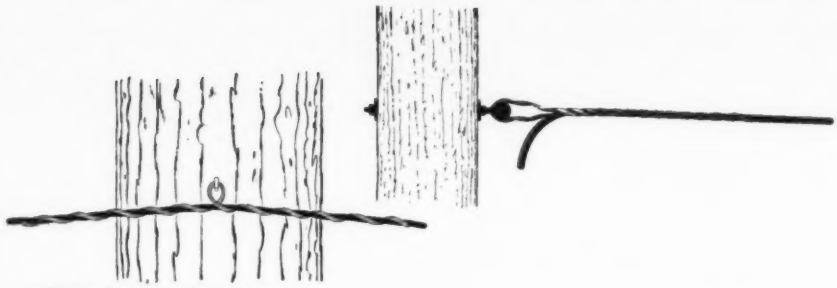
No matter what vegetation problem they run into along the way, they have a specialized Dow herbicide to whip it. For brush they use Esteron® 245, Kuron® and Esteron Brush Killer. To control both broad-leaf and narrow-leaf weeds in substations and pole-yards, they apply Baron®.

Whether your own crew or a professional spraying contractor does the job, you'll find Dow chemicals can cut your vegetation-control bill in half. Learn more about this cost-saving way to keep your rights-of-way full size and clear for easier maintenance, construction and patrol. Write to: THE DOW CHEMICAL COMPANY, Industrial Section, Agricultural Chemical Sales Dept., Midland, Michigan.

YOU CAN DEPEND ON DOW



GUY-GRIPS eliminate clamps and reduce strand required . . . do not slip! Tests prove that even extra high-strength steel strand breaks outside the Guy-Grip when subjected to impact, repeated load or gradual tension. Save 50% installation time.



FOR "C" RURAL

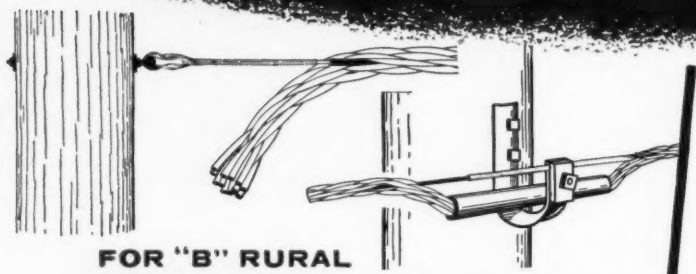
TANGENT SUPPORTS AND DEAD-ENDS

Made of stainless steel for corrosion resistance, these Preformed Tangent Supports and Dead-Ends are coated with Neoprene to cushion their grip and uniformly distribute holding pressure. Designed for 2 - #14 or 2 - #12 "C" Rural conductors, they assure a low radial pressure over the entire holding area and prevent slipping, thus eliminating a major cause of resagging. Note multiple-wire bail of Dead-End.

for the Telephone Industry

PREFORMED PRODUCTS

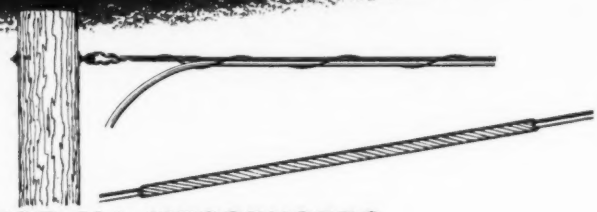
Used and praised by a growing list of leading Telephone companies, Preformed Products are the result of *progressive* ideas backed by *extensive research* and *sound engineering* insuring the ultimate in *field performance*. *Ask your Telephone Supplier for complete details of their exclusive advantages.*



FOR "B" RURAL

PREFORMED DEAD-ENDS are the easiest-to-install, non-slip answer to dead-ending. Can be installed without cutting messenger.

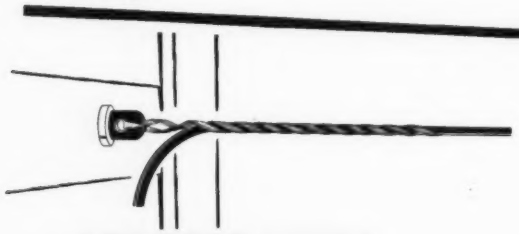
PREFORMED ARMOR RODS protect insulated messengers against clamping pressure or abrasion damage.



FOR ALL MESSENGERS

PREFORMED DEAD-ENDS AND SPLICES are the surest, safest and non-slip means of splicing and dead-ending all sizes of messengers. Easy to install . . . no tools required.

PREFORMED LASHING RODS, individual Preformed Rods designed to lash cables to messengers require no clamps. Neat. Easy to install. No tools needed. Can be removed and reused.



FOR DROP-WIRES

DROP-WIRE DEAD-ENDS of stainless steel . . . Neoprene coated . . . cushion the grip; eliminate abrading or cutting through insulation; provide low radial pressure over the entire holding area . . . no damaging concentrated pressures. No slippage or cold flow. Multiple-wire bail prevents fatigue failure.

FOR SELF-SUPPORTING CABLE

PREFORMED DEAD-ENDS AND LINE GUARDS with their large-area, uniform, low-pressure contact surfaces are the only devices in their classification that can be used safely with plastic-covered multiple cable. They were specially designed upon request for this use.

Made in accordance with or for use under one or more of the following U.S. Patents: 2,275,019; 2,587,521; 2,609,653; 2,691,865; other patents pending.

PLP

PREFORMED LINE PRODUCTS COMPANY

XUM

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Telephone industry brought into FCC hearing on pay-as-you-see TV by Zenith. CWA warmer on Bell System's group life insurance plan. Ford receiving no opposition on FCC nomination. Hell's Canyon bill defeated by House Committee.

ZENITH Radio Corp., a manufacturer of television sets which wants to get into the pay-as-you-see television business, threw a sharp curve at the Federal Communications Commission (FCC) last week, and it happened to affect the telephone industry. Zenith is one of a number of parties who would like to get FCC permission to go ahead with subscription television. And, as reported in this department last week, the FCC has already indicated that it is going to allow some experiments along this line, although it will probably take a little time to set up the arrangements.

Meanwhile the regular television networks are very upset about the whole business and have been persuading their friends in Congress to try to block any type of commercial television on a subscription basis, by legislation if necessary, now that the FCC seems likely to give the idea a trial. The regular networks evidently feel that if subscription television gets started, it will diminish the audience for their regular network programs and that, of course, would mean a loss of revenues from advertising. In general, it would set up some competition.

Be that as it may, the telephone industry has been an innocent bystander to this particular hassel. So far, the telephone industry's concern with television has been in handling network programs. But, here is where Zenith sees the possibility of the telephone companies getting into the television picture directly—unless the FCC goes ahead and sets up subscription television on a commercial basis (by Zenith and others who would like to get started on it).

Zenith suggests that telephone companies already have wires into millions of American homes and that these could be used for a closed circuit form of television transmission. The special receiving sets could be plugged into the telephone wires and house power just as the present conventional TV set is plugged into the house power and outside antenna. There is even some question whether telephone companies would even have to get any authority from the FCC for this sort of appliance service, since it would not involve the use of radio frequencies.

Zenith Radio pointed out that Los Angeles and Bartlesville, Okla., have already set up telephone wire studio-to-home hook-ups to television. At this point, the Zenith argument takes a very long step into the realm of speculation when it warns of the threat of the telephone industry taking over the television business. What all this adds up to, as far as an argument for Zenith's application to get started on subscription television is concerned, is a slap at the regular TV network for bucking subscription television. In other words, Zenith is saying, in effect, that pay-as-you-see TV is going to come along sooner or later no matter what the networks do about it. And, if they insist on blocking present applications, they might wake up and find the whole business taken over by telephone companies.

Zenith is probably looking under the bed for a bugaboo to use in its argument. But, it made an interesting reference, in its statement to the FCC, to recent arguments made by Bell System witnesses at the FCC microwave hearings, which have already been reported in this department. Zenith stated:

"We would like to point out that the American Telephone & Telegraph Co. has recently set forth at some length its plans and ambitions for the installation of a microwave point-to-point telephone and television system into the homes of its customers.

"AT&T made a very lengthy plea on behalf of the basic principle that all communications should be included in the Bell System monopoly. It alleged that the service and facilities which AT&T could offer cover the gamut of electric communication—from Morse telegraphy to color television, from reading a meter to reproducing a newspaper."

The Zenith statement went on to contend that such television service (on a house-wired basis) would not be as efficient or as economical as controlled broadcast. But it finally comes to the conclusion that "subscription TV is inevitable no matter what action the commission takes in this proceeding."

The argument is more ingenious than persuasive. It is hard to visualize the Bell System, or any of the Independent telephone companies, getting into the entertainment business—Hollywood style. As a matter of fact, the Bell System has been moving in the other direction whenever Western Electric or Bell laboratories came up with a by-product foreign to the telephone business. Readers may recall some years ago when Western Electric voluntarily divested itself of its sound moving picture equipment. It did the same with its hearing aid and other non-telephone by-products.

If, as Zenith suggests, there is an awakening of public interest in subscription TV on a house-wired basis, doubtless the telephone industry would be glad to render the leased wire serv-

ice for this purpose, just as it is glad to render circuits for teletypewriter news service and other purposes. But that is telephone business. It is not entertainment business.

Such operations would no more put the telephone industry in the entertainment business than the leasing of circuits for teletypewriters puts telephone companies in the news business in competition with the press associations. The chances are that Zenith thought up this argument mainly to build a fire under the FCC and get some action on Zenith's application to go ahead with a broadcast version of subscription television.

Bell Life Insurance Proposal

The chances seem pretty favorable that the Bell System will come to some agreement with the Communications Workers of America (CWA) on their group life insurance proposal. Heretofore, CWA has been fighting this plan for giving telephone company employes cut-rate life insurance for any number of reasons. The main reason seems to be that the company thought of it first. But, a recent proposal made by the Southwestern Bell Telephone Co. contains some provisions which Joseph A. Beirne, CWA president, acknowledged were very interesting and might make the plan acceptable to CWA.

The main features of the original plan remain the same. These are that a worker would be eligible to buy group life insurance up to an amount equal to his annual salary (rounded out to $1,000 of insurance). The first $1,000 of insurance would not cost the worker anything. And, for each additional $1,000, it would cost him 50 cents a month per thousand.

One of the changes made, however, which Beirne said might make the proposition more acceptable to the union is that the plan would be in the form of a contract between the company and the union and not (as originally proposed) a company plan subject to union assent. Of course, Bell could still deal directly with employes not represented by the union on this matter.

CWA did not accept the company's proposal and probably will not do so for the immediate future. But its 14-member executive board, which met at Front Royal, Va., ordered additional negotiations and the plan will probably be sent around to the various union districts for comment and approval before there is a final agreement. At the moment, however, it looks promising in the light of the tentatively favorable CWA reaction noted at the Front Royal meeting.

REA Loans $858,000 in Two States

Two loans approved by the Rural Electrification Administration will provide more than 600 rural families with their first telephones and improved service for some 900 others in North Dakota and Oklahoma, the U. S. Department of Agriculture announced on July 23. Details of the loans, which totaled $858,000, follow:

Northwest Mutual Aid Telephone Corp., Columbus, N. D. (mailing address: Ray, N. D.); $460,000, third loan (July 18).

The cooperative plans to bring improved service to 506 farm families and to furnish initial service to 45 other rural families now without telephones. The borrower has acquired with its own funds the Grenora (N. D.) Telephone Exchange and proposes to acquire the Bowbells (N. D.) Telephone Co. The two companies now provide magneto service to 506 subscribers and switchers.

New facilities planned by the cooperative include automatic central offices at Grenora and Bowbells.

The present and two prior REA loans, totaling $2,167,000, will enable the Northwest mutual to furnish new and improved service to 2,920 rural subscribers over 2,924 miles of line. The system will consist of 12 exchanges. Seven exchanges are in operation. Three more are scheduled to be cut over this fall.

Arthur S. Johnson is president of Northwest Mutual Aid Telephone Corp.

•

New State Telephone Co., Roosevelt, Okla.; $398,000, third loan (July 19), to finance initial service to 594 rural families, and improved service to 441 existing subscribers.

As a nucleus for the new service, the company plans to acquire facilities of the Canute (Okla.) Telephone Company at Canute and the Foss (Okla.) Telephone Co.

New automatic exchanges are scheduled to replace existing magneto facilities in Canute and Foss. A third automatic central office will be built at Burns Flat to serve a new community in the vicinity of Foss.

The present and two prior REA loans, totaling $888,000, will enable the New State company to provide new and improved service to 2,189 rural subscribers and the system will consist of seven exchanges. Those at Cooperton, Cotebo, Headrick and Roosevelt are now in operation serving approximately 900 subscribers.

Harold Peterson is president of New State Telephone Co.

Ford Nomination

The high winds blowing around the U. S. Senate over civil rights moderated just enough last week to let President Eisenhower's latest nomination to the FCC progress towards ratification. As already noted in this department, the nominee to fill the vacancy left by the expiration of the term of former chairman George C. McConnaughey, is a government attorney, Frederic W. Ford, who has been serving as Deputy Attorney General with the Justice Department. Ford, as a former career official of the FCC —he was a staff attorney—is not likely to encounter any real opposition.

The action of the Senate Interstate and Foreign Commerce Committee in voting to recommend confirmation virtually assures the same. It is only a question of time. As long as the civil rights filibuster continues, Ford's nomination can only be taken up by unanimous consent to suspend the business of the Senate for that purpose. But, this is frequently done where there is no opposition; and it could very well happen in the case of Ford.

Less likely to get such unanimous consent is President Eisenhower's other regulatory appointment—the renomination of Jerome K. Kuykendall to another term on the Federal Power Commission (FPC). Kuykendall was chairman of that commission and will probably continue as chairman if he ever gets confirmed. But, he ran into some heavy opposition from the opponents of the bill to exempt natural gas producers from the FPC's jurisdiction and also from some of the public power zealots.

While this opposition may not be strong enough to defeat Kuykendall's renomination, it could stop the Senate from considering it until after the civil

(Please turn to page 23)

Traffic Line and Terminal Assignment in Automatic Equipment

By A. W. BAERRESEN*

PROPER assignment of lines and main stations in an automatic office, on a day-to-day routine basis, is of prime importance from economy and service standpoints. Many telephone companies do not obtain the best use of their automatic central office equipment, because they do not employ line and terminal assignment practices which are necessary in order to maintain an even distribution of traffic over all available equipment during each busy period of the day. Without good load balance, subscribers will not obtain the grade of service that the central office capacity is designed to provide. This article discusses the principles involved in good line assignment procedure and outlines desirable practices.

The first principle in automatic office administration is to plan for all subgroups of call-carrying equipment to be equally loaded during each busy hour of the day. It is inefficient to have some groups of switches underloaded during periods when other groups are fully loaded or overloaded.

As far as possible, each group must be made to share in carrying the load at all times, so that there will be no overloaded groups unless the whole office is equally overloaded. This ideal condition, referred to as "balanced traffic," results in the best grade of service for the automatic central office equipment investment.

To carry out this concept, assignment practices must insure that each class of service is proportionally allocated and assigned, insofar as the equipment will allow, in every subgroup of line and terminal equipment. That is, each class of service should be evenly spread over all sub-groups which are equipped to handle the class of service and which have the same traffic capacity. In this way, advantage is taken of the non-coincidence of the busy hours of different classes of service.

Non-Coinciding Busy Hours

Different classes of subscribers have different calling habits and the busy hours for each class usually do not coincide. For example, most business lines do not originate or receive calls before or after business hours, or on Sundays and holidays. The average business line, however, has a heavier usage throughout the business day than does the average residence line and, in addition to the morning busy hour, may have a peak period around 4:30 to 5:00 p.m.

On the other hand, residence lines have usage in the evening and on Sundays and holidays, as well as during business hours of the day. Various classes of residence service may have different busy hours. The higher grade classes such as one-party may have slightly heavier traffic during the morning busy hour than during the evening busy hour, whereas, the four-party lines may have low morning usage but heavy usage in the evening. The heavy usage of rural lines may occur at hours during which the other lines do not have peak traffic. The usage (call seconds) of residence lines in most offices is higher in the evening busy hour than in the morning busy hour, because of longer conversations, even though the residence calling rate (peg count) may be higher in the morning.

A. W. BAERRESEN

If equipment or trunking access reasons do not require such separation, it would obviously be inefficient to segregate business lines into line and terminal groups distinct from residence lines, and to separate the four-party residence lines from the one and two-party residence lines. Where message-rate business lines must be served from separate message-rate line groups, with the flat-rate residence lines handled in line groups not equipped for message service, the message-rate line finders and first selectors may be only lightly loaded in the evening hours, when the residence group line-finders and first selectors are carrying their heaviest load of the day. Also, a trunk-hunting connector group, if serving only business lines, would be under-loaded in the evening when the connectors in the other groups are heavily loaded.

Balancing by Distribution

With each class of service evenly mixed in all line and terminal groups, all the groups will fully participate in carrying the office busy hour traffic load. The office busy hour load is, of course, less than the sum of the loads of the individual busy hours of each class of service. Therefore, less total call-carrying equipment is required when the various classes of lines and

*Mr. Baerresen is a telephone traffic consultant. He authored a two-part article on "Terminal-Per-Station Operation of Telephone Party Lines" which appeared in the Aug. 25 and Sept. 1, 1956 issues of TELEPHONY.

main stations are distributed over the maximum possible number of line and terminal groups.

Of course, different classes of service have different calling rates and holding times and, if separated in different line and connector groups, these groups must be engineered with different traffic capacities. However, where several classes of service can be evenly mixed throughout one type of equipment, these equipment groups can all be of the same traffic capacity. This results in an arrangement much easier to administer and with some saving in equipment as compared with groups of different capacities. The equipment is generally engineered with uniform groups, as far as possible, and the office accordingly should be assigned on the same basis, otherwise the call-carrying design of the office will not be fully utilized.

With the various classes of service evenly mixed in the line and terminal groups, it is not necessary to maintain administrative records of calling rates and holding times or usage for each class. The call (peg) counts, the all-trunk busy registrations, and usage counts of the mixed traffic is generally sufficient data for administrative purposes. However, if a breakdown of originating traffic characteristics by class of service is needed, sample lines by class must be temporarily transferred to a separate line group for study.

Assignment Allotments

To assure that an even spread of the various subscriber services will be made, and then continuously maintained throughout the central office sub-groups of subscriber equipment, a tabulation of the desired "allotments" for each size and type of equipment group should be set up to serve as the assignment guide. This may be done each six months or each year for the immediate future period. The development to be served at the end of the period is obtained by adding to the present number of working lines and main stations of each class, the expected growth in each for the future period. The past growth for the corresponding months may be used in estimating future growth.

Let us consider some simple hypothetical examples to make clear the procedure for determining the allotments:

Assume a step-by-step terminal-per-station office of 1,300 line equipments and 2,000 connector terminals as follows:

Six full 200-point line finder groups with 18 finders each.

One partial line finder group with 100 lines and 11 finders equipped. (Assume that the coin lines are postpay and may be assigned in any line group).

Eighteen regular connector groups with eight frequency-per-terminal connectors each.

One connector group of seven connectors for segregating the coin stations for coin number identification.

FORM L-2 — RECORD OF LINEFINDER TERMINALS — OFFICE ALPHA-2

LINEFINDER SHELF A — LINE GROUP NO. 3

L.F. TERM.	PTY. 1 30	PTY. 2 20	PTY. 3 42	PTY. 4 54	PTY. 5 66	CLASS OF SERVICE: 1-B	2-B	8-B	PBX	PS	SP	1-R	2-R	4-R	8-R	TRF. CLASN.	BUNCH BLOCK
150	2367					/											
159	3965								/							V	
158	3981								/								
157			2289									/					
156	2464	3815											/				
155		2412										/				H	
154	3179					/											
153	2131								/								
152	3245					/											
151						A	(24)										
140																V	
149														A	(24)		
148			2252		3C									/			

LINEFINDER SHELF B — LINE GROUP NO. 3

L.F. TERM.	PTY. 1 30	PTY. 2 20	PTY. 3 42	PTY. 4 54	PTY. 5 66	CLASS OF SERVICE: 1-B	2-B	8-B	PBX	PS	SP	1-R	2-R	4-R	8-R	TRF. CLASN.	BUNCH BLOCK
160	2761		2336										/				
169																V	
168		3262										/					
167	2033	2356	2405	3865										/			85
166	2912											/					
165	2832	3340 / 2853	3062 / 3421		3695										/		16
164			3059									/				H	
163		3578				/											
162	2613					/											
161	2225					/											
170													A	(24)			
179																V	
178																	

123								A	(23)								
122	2585	2727 / 2829	3265		3549						/						23
121	2324		2736				1										
110	3905								/							V	
119		2271	3429								/						16
118	3313	2682		3718							/						134
117			3077	2819							/					V	
116	3624					/											
115		3553								/							
114						A	(24)										
113	3806					/											
112	2625					/										H	
111	2151							/								L	

193	3692																
192		2931															
191	2181											/				H	
100																V	
109														A	(24)		
108	3933											/					
107																V	
106		3373	2754	2490	3764										/		108
105	3819													/			
104		2027		3636									/				
103	2027													/			
102	3350																
101	2531																

SERVICE CLASN.	1-B	2-B	8-B	PBX	PS	SP	1-R	2-R	4-R	8-R		VAC.	MISC.	ASSIG.		TOTALS
ALLOTTED THIS GROUP	53	2	-	7	6	5	59	26	27	3						188
WORKING THIS GROUP	49	1	-	6	4	4	54	24	25	3		(10)	(2)	(18)		170

FIGURE 1

One trunk-hunting connecter group with 20 connectors.

Assume that the development to be served at the end of the assignment program period is as shown in *Table I* below:

Table I
Class of Service

	1-B	2-B	8-B	*PBX	1-R	2-R	4-R	8-R	(1) C-P	(2) C-SP	Total
Lines ...	343	13	**	45	385	170	172	22	40	30	1220
Main Stations	343	21	30	45	385	290	475	103	40	30	1762

*Includes all lines requiring trunk hunting service.
**Included in 8-R.
(1) Coin—public paystation post-pay.
(2) Coin—semi-public post-pay.

All classes of service can be handled in each line group. The partial line group with 100-line equipments, having 11 finders, has the same traffic capacity per line as the 200-size line groups with 18 finders each. Each regular line group should then handle 2/13 or 15.4 per cent of each class of service, and the partial group 1/13 or 7.7 per cent. The line-group allotments for the next period would be as shown in *Table II* below:

Table II
Line Allotments Per Line Group

No. of Groups	Type	1-B	2-B	8-B	PBX	1-R	2-R	4-R	8-R	C-P	C-SP	Total
6	200	53	2	—	7	59	26	27	3	6	5	188
1	100	27	1	—	3	30	13	13	1	3	3	94

All coin stations and all lines requiring consecutive hunting must be assigned in the special connector groups for these services. Assuming that twenty trunk-hunting terminals are being held in reserve for growth in consecutive-line systems and a terminal fill (including reservations) of 90 per cent is desired, there would be 25 terminals in the trunk-hunting connector group which may be assigned to other services. These terminals should be used for residence stations rather than for business stations, since a residence number can more readily be changed if the terminal is needed for a PBX trunk.

All of the non-PBX, non-coin main stations, less 25 one-party residence stations to be assigned in the rotary group, would then be proportionately spread over the remaining 18 regular connector groups. The connector allotments would then be as shown in *Table III* below:

Table III
Main Station Allotments per Connector Group
—(Frequency-per-Terminal—Terminal-per-Station)—

No. of Groups	Type	1-B	2-B	8-B	PBX	1-R	2-R	4-R	8-R	C-P	C-SP	Total
18	Regular	19	1	2	—	20	16	26	6	—	—	90
1	Coin	—	—	—	—	—	—	—	—	40	30	70
1	PBX	—	—	—	45	25	—	—	—	—	—	70

As another example, assume that the regular connector groups in the above terminal-per-station office are equipped on a frequency-per-group (sometimes referred to as frequency-per-shelf) basis, instead of being provided with the frequency-per-terminal equipment.

The connector groups are the same in number and size as in the previous example and the five ringing frequencies are assigned as follows:

No. of Groups	*Type*	*Ringing Frequency*
4	Regular	20 cycles
4	Regular	30 cycles
4	Regular	42 cycles
3	Regular	54 cycles
3	Regular	66 cycles
1	Coin	30 cycles
1	PBX	30 cycles

Since the lower frequencies would be first choice on party lines, fewer terminals of the higher frequencies would be required and the allotments for the connector groups might be the same as before, if no more than 156 four-party stations required the higher frequencies (6 groups x 26). However, if the five frequencies were equally used on the four-party lines, 95 four-party stations (475÷5) would need to be assigned in the 54 and 66 cycle groups, or 32 per group. In this case then, the regular connector group allotments might be made as follows:

Table IV
Main Station Allotments Per Regular Connector Group
—(Frequency-per-Group—Terminal-per-Station)—

No. of Groups	Type	1-B	2-B	8-B	PBX	1-R	2-R	4-R	8-R	C-P	C-SP	Total
4	20											
4	30	19	1	2	—	20	19	24	6	—	—	91
4	42											
3	54											
3	66	19	1	2	—	20	10	32	6	—	—	90

Where negative and positive superimposed ringing is employed, half of the regular connector groups should be negative and half positive ringing. With this type ringing in the above example, nine of the regular groups would be negative and nine positive and the classes of service could be evenly spread, and the connector allotments would be as shown by *Table III.*

As still another example, let us assume the same line and station development as shown by *Table I,* but that the office to be assigned is operated on a terminal-per-line basis for the party lines with individual-line connector groups for one-party services and that an intermediate distributing frame is provided. The central office line equipment is the same as before (six full and one partial linefinder groups) and that the line group allotments will be the same as before *(Table II).*

The connector equipment provided is as follows:

6 Ten-party terminal-per-line groups with 10 connectors each.

7 Individual regular groups with nine connectors each.

1 Individual coin group with seven connectors.

1 Trunk-hunting PBX group with 20 connectors.

The coin and PBX group allotments will be the same as before, with the PBX group serving 25 one-residence stations. The evening usage of the party lines is so heavy that the 10 connectors will handle only 65 party lines each, while the morning BH party line usage is low so that up to 25 business lines may be carried in the party boards without morning or evening overloads. The connector allotments for this office would then be as given in *Table V,* assuming that 20 business lines are allocated to the party boards. (See *Table V* at top of page 23.)

Table V
Line Allotments Per Connector Groups
—(Terminal-per-Line)—

Groups	Type	1-B	2-B	8-B	PBX	1-R	2-R	4-R	8-R	PPC	SPC	Total
6	Pty Line	*20	2	—	—	—	28	29	4	—	—	83
7	Ind.	32	—	—	—	52	—	—	—	—	—	84
1	Coin	—	—	—	—	—	—	—	—	40	30	70
1	PBX	—	—	—	45	25	—	—	—	—	—	70

***Only business firms which are closed after 6 p.m. to be assigned.**

Assignment Records

Line and connector terminal records must be maintained to readily show at all times the status of use and availability of all subscriber terminal equipment. These records must be arranged so as to facilitate totaling by groups, to show the number of terminals in each group in use for each class of service, the number available for assignment for each class, and the terminals, by class of service, which have been released for assignment but not yet connected. These records should readily indicate the assignment balance of the office at any time.

Fig. 1 shows a form used as a "Line Assignment Record" with sample entries. This form has line spaces for half of a 200-pt. L. F. group. It has columns for entering, for each working line equipment, the associated connector terminal or terminals (telephone numbers) under the appropriate ringing arrangement, and columns for indicating the class of service. The "count" of lines working in the group by class of service is easily obtained by counting the "stroke marks" in each class of service column and entering the total (of two forms for a 200-pt. group) at the bottom of the page, where they can be compared with the allotments which are entered above the group totals. The sum of the totals of all the line record forms furnishes the official count of working lines.

Figure 2 shows a form used as a connector terminal assignment record for terminal-per-station equipment, with sample entries. Columns are provided for entering, for each working terminal, the associated line equipment and for indicating the class of service. The count of working terminals (main stations) in the group, by class of service, can be easily made by totaling these class-of-service columns. The "remarks" column is used to indicate dates of disconnect or number change to determine availability of discontinued terminals for reassignment. The

(Please turn to page 38)

OFFICE ALPHA-2

FORM B

RECORD OF AUTOMATIC NUMBERS ASSIGNED

CONNECTOR GROUP NO. 2500
REGULAR RING. E/T

NUMBERS	RING CONT.	LINE EQUIP. GROUP AND NUMBER	CLASS OF SERVICE	TRF. CLASSN	REMARKS
50	2 6 135	1-R			
59	5 5 94	8-R			
58	3 1 31	2-R			
57	1 3 174	1-B		H	
56	3 7 14	2-R			
55	1 2 16	1-R			
54		4-R			D 6-3-56 REF TO AL-2-2535
53	4 4 115	2-B			
52	3 2 10				
20					
29	4 4 195	8-R			
28	1 5 146	1-R			
27	1 4 32	2-R			
26	2 6 69	8-R			
25	2 7 18	2-R			
24	1 5 101	1-B		L	
23	1 1 135	1-R			
22	1 3 48	1-B			
21		A			A (23)
10		1-R			A (22)
19		C			CHG TO AL-2-2161 4-1-56
18	4 1 15	8-R			
17	1 3 95	1-R			
16	3 5 86	8-R			
15	2 6 75	8-R			
14	1 1 162	1-R			
13	1 6 144	2-R			
12	1 2 69	1-B			
11	1 3 05	1-B			

NUMBERS	RING CONT.	LINE EQUIP. GROUP AND NUMBER	CLASS OF SERVICE	TRF. CLASSN	REMARKS
60	4 3 130	4-R			
69	3 4 82	8-R			
68	2 2 31	8-R			
67	1 1 117	1-R			
66	2 4 23	8-R			
65	1 3 183	1-R		H	
64		C			CHG TO AL-2-2161 7-6-56
63	1 5 113	8-R			
62					
99		4-R			TEST
98					V
97		8-R			A (23)
96	3 2 65	8-R			
95		8-R			D 5-28-56
94	2 1 135	8-R			
93	3 3 01	8-R			
92	2 6 73	2-R			
91	1 4 25	1-B			
00					V
09					V
08	1 1 70	1-R			
07	2 2 165	8-R			
06	1 6 92	8-R			
05		2-R			A (24)
04	1 7 50	4-R			
03	2 6 71	8-R			
02		C			CHG (AL-2-2431) 8-1-56 DO NOT REFER.
01	3 7 30	8-R			

SERVICE CLASSN.	1-B	2-B	8-B	PBX	PS	SP	1-R	2-R	4-R	8-R	DISC.	N.CHG	VAC.	ASSIG.	MISC.	TOTALS
ALLOTTED THIS GROUP	19	1	2	—	—	—	20	16	26	6						90
WORKING THIS GROUP	16	0	1	-	-	-	19	16	25	5	(4)	(3)	(3)	(7)	(1) TEST	82

FIGURE 2

XUM

Virginia Association Invites Students to Exhibits

THE TELEPHONE operating companies are sending many of their personnel to schools, universities and seminars. The courses cover a wide range of subjects from the "humanities" to the "technical" to the everyday operating problems.

Applying this general idea of "constant training," the Virginia Independent Telephone Association, under the leadership of its president, Walter G. Robertson—who is also vice president and general manager of the Tidewater Telephone Co., Warsaw—conceived the idea of inviting engineering students from nearby universities to develop a closer touch with the equipment, the companies and the problems of the telephone industry.

This closer touch will materialize at the association's annual convention in Roanoke when approximately 100 engineering students in the junior and senior classes of the University of Virginia, Virginia Military Institute and Virginia Polytechnic Institute attend a preview of the exhibits on Oct. 23, the day before the convention opens.

The exhibitors will be the instructors in this case, each exhibitor to give a five-minute talk, on a subject he selects, to each group of 10 students as they are conducted from exhibit to exhibit by a guide, who is from one of the operating member companies. Plenty of time will be allowed after the conducted tour for the student to return to any exhibitor for further information.

The students will be requested to write reports on their inspection trip, emphasis being placed on "what new ideas came to their minds as they went from exhibit to exhibit—were they interested in research, development, production, application, sales, management, personnel relations, cost, financing, corporate organization, etc." It is hoped that copies of these reports will be furnished the Virginia association.

The association plans to review these reports to determine first the merit of, and, second, to obtain ideas for, future meetings.

Mr. Robertson reports, "The enthusiastic cooperation of the hotel, manufacturers, Deans of the Engineering Schools, and the operating companies, makes this an interesting experiment in bringing together the men and the industry who are to carry on work so vital to our nation's public and economic welfare."

IN THE NATION'S CAPITAL

Concluded from page 18

rights bill is disposed of. By that time the Senate could be in such a jam that the whole thing could go over the end of the session. That means Kuykendall will have to come back on a recess appointment.

It is an interesting coincidence that the chairmen of four federal regulatory commissions are former state commission chairmen from two states —Washington and Wisconsin. Kuykendall formerly headed the Washington state commission as did Owen Clarke, who is chairman of the Interstate Commerce Commission. Chairman Doerfer of the FCC, once headed the Wisconsin Public Service Commission, and so did the chairman of the Civil Aeronautics Board, James Durfee. This is one of those irrelevant facts which has no significance whatever except that, under the law of averages, it probably would not happen again in a thousand years.

Hell's Canyon Buried

Although the Democratic majority in Congress have been making every possible effort, the controversial bill to put Uncle Sam further in the power business with a huge federal dam on Hell's Canyon on Snake River, collapsed last week in the House Interior Affairs Committee. Such a bill had already been approved by the Senate in a surprising vote in which some southerners traded their ballots for the votes of so-called "liberal" senators in an effort to sidetrack the civil rights bill.

But the House Interior Affairs Committee by a close margin of 16 to 14, scuttled a similar bill when two southern Democrats joined a solid minority in defeating the measure. Later on, a sub-committee voted 19 to 2 to defer action on any further legislation of this type at this session, including the bill passed by the Senate. So that just about ends the long drawn-out controversy which threatened to make the electric utilities a clear-cut partisan issue in the congressional elections of 1958.

The Democrats had no illusion about the enactment of a Hell's Canyon bill. They knew if ever the bill did pass Congress, President Eisenhower would veto it. And later President Eisenhower confirmed this in a letter saying that he just could not understand anyone who would want to stop a private power company which is now building three low dams on Snake River at virtually no expense to the taxpayer.

But the majority's political angle was to appeal for votes in the Pacific Northwest on the proposition that the Democrats wanted to give the people out there a federal dam and a Republican President vetoed it. This argument is no longer possible because the bill itself was defeated in the committee of the House of Representatives controlled by the Democratic Party. True, it was done with Republican votes, but the issue has been blunted for political purposes even though we may hear more about it during the campaign next year.

Technical Commission Makes Report on Radio-telephony

The Radio Technical Commission for Marine Services (RTCM) announces the availability of the report of Special Committee 34 on its "Ship Telephony Education Program."

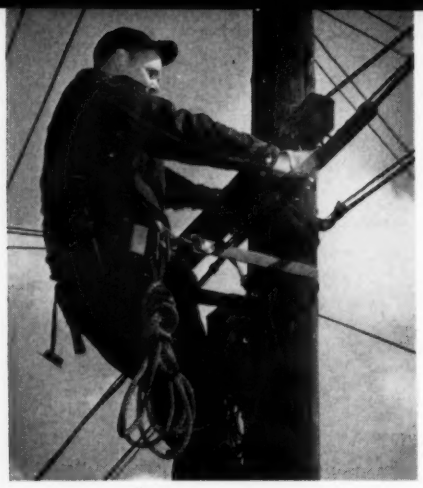
SC-34 is the most comprehensive report today on the subject of Radiotelephony, says the RTCM executive committee. Written in the layman's language, it provides a handy guide to the proper usage of the marine radiotelephone and the discipline and knowledge required of the operator.

Educational measures to improve the operation of the radio-telephone system are also discussed for the guidance of user organizations, manufacturers, dealers, service organizations and communications companies.

Copies are available from the Radio Technical Commission for Marine Service, care of the Federal Communications Commission, Washington 25, D. C. Copies cost 50 cents each in orders of 25 or more; 60 cents for single copies and orders up to 25 copies.

Telephone More Valuable

"Telephone service is better and more valuable today than at any time in the past. More people have telephones. In fact, the average subscriber can call, without additional charge, nearly four times as many people as 15 years ago."—J. D. PORTER, *assistant vice president of revenue requirements, Southern Bell Telephone & Telegraph Co.*



THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

AT THE END OF 1956, Southern Bell Telephone & Telegraph Co.'s motor fleet consisted of some 9,651 vehicles. This fleet is made up of 6,910 small work trucks (½ ton), 1,227 trucks without a winch, 383 winch-equipped, and 1,131 passenger cars. During 1956, this company's vehicles traveled about 103 million miles or approximately 11,000 miles per vehicle for the year.

According to Southern Bell, a construction truck is generally required for somewhere between $65,000 and $85,000 worth of outside plant construction work that is carried on during a year. Further, on the average, a maintenance truck is necessary for every 1,000 telephones in service. An installation truck is considered justified where the installation load averages 100 telephones per month per truck.

Most passenger cars are used in the supervision of craft forces and the number of such cars required is in direct relation to the number of work trucks in service. Usually, one passenger car is considered necessary for direct supervision of about every eight trucks in service.

•

The advantages of the wedge clamp principle for supporting drop wire have been well known to the entire telephone industry ever since Reliable first manufactured such clamps about 35 years ago.

This company for years manufactured copper clamps to support the various types of telephone drop wire; dumb-bell type, parallel non-reinforced, parallel reinforced, and twisted pair. They even shimmed a copper (PS) clamp for a smoother surface and for a better fit on some of the smaller drop wires.

Now Reliable stainless steel wedge-type clamps—some types with floating stainless shims—are made for all standard drop wires. The new, separate, smooth shim is designed for easy sliding action. It provides a metal surface, rather than just the insulation for the wedges to slide on.

The P-2 series of clamps have an aluminum shell, but a stainless wedge. In non-corrosive areas, the aluminum shell type will show a substantial saving, the manufacturer states. In coastal and other corrosive areas, however, the all-stainless steel clamp should be used.

•

It is noted that most business concerns now indicate their telephone number on their firm's letterheads. Some even show their TWX call.

This is considered an excellent practice, but it is surprising to note the number of business cards that give the firm's name and address but no indication of the telephone number.

•

We have always had a high regard for the aluminum outdoor-type telephone booth. They present a neat appearance and from all indications are quite serviceable. We have noticed that when a second booth of this type is installed at one location outdoors that the two booths are usually separated by several inches of air space. We have used one booth when the second one was occupied and have not noticed any interference as a result of the other party's conversation.

Recently we noted an installation where five of these outdoor type booths were lined up inside a building. The booths were jammed together and you can clearly see as well as hear everything the party in the adjacent booth is saying.

•

When cutting thin wall meal tubing with a hack saw, difficulties are generally encountered because the blade tends to grab or chatter on the return stroke.

This difficulty can be minimized by mounting two blades in the hack saw frame with the teeth pointing in opposite directions.

•

We are advised by a certain manufacturer that he has converted two of the miniature plastic telephones into transistorized radio receivers.

The handset is equipped with a cord and a hearing-aid-type receiver. The telephone dial finger plate is moved for tuning.

This manufacturer is now considering the fabrication of these units in quantity for sale.

•

We often wonder why individual relay covers—i.e., one cover for a strip—are provided on large equipment bays. These small covers are expensive, bothersome for troublemen, and can cause trouble and damage to equipment when they are carelessly placed on or removed from relays.

It would appear to be a much better arrangement to install large plastic covers over an entire bay or at least a part of a bay of relays.

•

The proper lighting of a manual switchboard has long been considered a serious problem.

Too much light causes a glare on the key shelf and face equipment and the operators have difficulty in seeing the line and supervisory lamps properly.

If the light is reduced below a certain level, the operators experience difficulty in doing their work properly and may suffer eye strain.

Fluorescent lighting has proved highly desirable in most cases for the

XUM

The truth about magazines in doctors' offices

by John Voss

Maybe I'm wrong, but I can't go along entirely with the idea that the proverbial "old" magazines in doctors' and dentists' offices are a total loss.

I look at it this way:

Except for "hot" news in some weeklies, most of the editorial content of American magazines is quite timeless—good reading for a long while after publication date. But more important, I think, a great many patients waiting in an office get a chance to read magazines they *might otherwise never see at all.*

Why am I discussing this with you?

Well, I was wondering what you do with your copies of *Telephony* and *Telephone Engineer and Management.*

Believe me, I'm not going to suggest you send them to local physicians' offices. I don't think an article on posthole digging would relax even me, while I was sitting and listening to a dentist's drill.

But I would like to feel that, after you and your immediate associates have read them, they be circulated to as large a group of your employees as is practical—right down to the maintenance and service men whose names usually aren't on the route list of executives.

I admit to some self-interest in making this suggestion. Men at your level make many important decisions. But, when it comes to selecting equipment for either central offices or subscriber premises, I'm sure you often ask the opinion of the trouble-shooters and construction men.

We hope these men see our advertising. If not, they're apt to be unfamiliar with new products and they're also apt to have prejudices conceived many years ago.

For example, our pre-war telephone instruments weren't up to today's standards. And, prior to about 1947, our dial was nowhere near its present excellence. We've corrected all these things—but I have had personal experience with outside plant men who still think of us in terms of some single unsatisfactory experience 'way back when. If they read, even cursorily, our product stories in the magazines, they'd have a better idea of how much independent manufacturing has progressed.

You may answer—but they'll be reading your competitors' ads, too. We'll take that chance—I'm that sure of how any equipment we make will stand up in comparison.

John H Voss

Vice President and General Manager
Telecommunication Division

STROMBERG-CARLSON, A Division of General Dynamics Corp., Rochester 3, N. Y.

Advertisement

lighting of switchboards. We have a report on one installation where this type was used to provide 30 foot-candles of glareless illumination on the key shelf without complaint from the operators about the visibility of lamp signals.

We also have a report of an experimental installation where the ceiling of the operating room is to be plastic-paneled and made luminous with fluorescent lamps installed above it. This would appear to be an ideal arrangement.

•

Urethane foams, a DuPont product, are used not only for insulating industrial equipment but for personal insulation as well. Flexline urethane foam linings are available for a variety of winter garments.

Of special value for outdoor occupations is a light-weight nylon under-all with urethane foam interlining. Wearing this underwear, a man can work comfortably in cold weather unhampered by heavy outer garments.

The cellular lining insulates against loss of body heat, yet allows moisture from the body to evaporate. Knitted nylon wristlets and anklets seal off chilling drifts up the sleeves and pants legs. Around the neck is a snug-fitting knitted collar. The two-piece under-all is equipped with snap fasteners and weighs only 32 ounces.

This flexible personal insulation permits complete freedom of movement for the most active job. And the urethane interlinings are durable. They stretch under stress but also return immediately to their original shape.

The foam-interlined nylon under-alls may be laundered or dry cleaned without changing either their fit or fitness. Their insulating properties are not affected by repeated washings and the garments may be machine-dried safely. Summer storage is not a problem since urethane foam is moth resistant.

These insulated under-alls should prove highly desirable for linemen and other telephone construction workers who must be outside in all kinds of severe winter weather in some parts of the country.

•

Reflector signs along highways to indicate that a public telephone will be available at a certain location perform a real service to the motoring public. Otherwise, locating a public telephone late at night when one is traveling strange highways could present a serious problem.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Would you review for us what advantages may be expected in the all-electronic switching systems when they become available?

A. One authority informs us that the principal advantages hoped for from the electronic switching systems are:

(1) Low first cost.
(2) High degree of reliability.
(3) Ease of maintenance.
(4) Long life.
(5) High operating speed.
(6) High transmission quality.
(7) Small volume and weight.
(8) Flexibility of operation.

In large towns and cities where building space is scarce and costly, it would prove most opportune to turn to better account the buildings already available for exchanges by reducing the volume of switching equipment.

In other words, if an old style exchange could be replaced by three new exchanges of the electronic type, the housing cost would be reduced tremendously.

•

Q. There are so many different tones now being used in connection with normal telephone service that we often find it extremely difficult to provide a signal that can be readily identified for testing. Can you advise us how a special tone can be provided for this purpose?

A. A special transistorized unit is now on the market that transmits short bursts or "beeps" of audio tone which are markedly different from all tone-dialing and other signals normally used in telephone systems.

To trace circuits or locate faults in cables, main frames, central office equipment, etc., this unit is simply connected to the circuit. The circuit carrying the beeper tone can then be traced with earphones. The peak output of the unit is approximately 1 volt peak-to-peak in a 600-ohm load.

•

Q. What method may be used to predict the service life of dry cell batteries?

A. We are advised by one dry cell manufacturer that the following five factors determine the life of a battery in any application:

(1) Initial current drain.
(2) Hours of use per day.
(3) End point voltage.
(4) Temperature.
(5) Storage period prior to use.

Since any one of these factors will affect the actual number of hours that a battery will last in a user's hands, it is impossible to predict battery life accurately.

Assuming values for the five factors does allow comparison between battery types for a particular service, and a rough idea of service life may be obtained if the approximate user's operating schedule is known.

•

Q. We wonder whether it will be safe to make direct burial of plastic-jacketed cable without any mechanical protection in order to provide exchange distribution in a small town?

A. There are several types of plastic cable designed for direct burial, and these have proved to be entirely satisfactory

If your section of the country is not infested by rodents, there is every reason to believe that this type of cable would prove satisfactory.

However, we suggest that you confer with your cable supplier and obtain his recommendation as to the type of cable that will be best suited for direct burial in your particular section of the country.

•

Q. What is the best method of making certain that the tensions on relay contact springs are equal when making critical adjustments?

A. It is suggested that you consider the use of a spring tension gauge which indicates the tension in grams.

This gauge can be purchased from your telephone supply house at a reasonable cost.

XUM

Washington-Oregon Consider Ways to Merchandise Services

THE 450 PERSONS attending the 10th jointly held Oregon-Washington Independent Telephone Association Convention in Spokane June 13-14, heard some stimulating discussions. Ways to increase revenues, some "tonics" for small exchanges, a look at the current legislative situation in the nation's capital, suggestions for improvement in public service as viewed by the state commissions were among the highlights of a comprehensive and fact-packed program. Open forums on plant, accounting, commercial and traffic provided a cross-section of current thinking and exchange of ideas.

The general sessions were opened by W. F. Barnett, president of the Washington association.

No business is more truly representative of what we call The American Way than the thousands of companies, large and small, that make up Independent telephony, Hugh Barnhart of Rochester, Ind., vice president of the United States Independent Telephone Association, told the opening session, and not the least of the factors in its progress is the trade organization, the USITA, which this year is celebrating its 60th anniversary.

Commenting upon the current legislative situation in Washington, D. C., Mr. Barnhart pointed to the need for redoubling efforts at the state level to meet the onslaughts of the well-organized lobby against reimbursement to utilities for highway relocation costs, which is now "firing from every sector" since the recent bill introduced into the House by Congressman Jones of Alabama.

The association is also continuing to "battle every inch of the way" in an all-out effort to save the present exemption of switchboard operators under the Fair Labor Standards Act, Mr. Barnhart said. A letter has been addressed to Senator Kennedy, chairman of the House Labor Subcommittee, which terms as "utterly unrealistic" and of "grave concern to small Independent telephone companies," the bill which he and Senator McNamara have introduced to rewrite most of the Fair Labor Standards Act, thereby restricting switchboard exemption to "an operator providing telephone service through a telephone switchboard located in such operator's home."

Discussing ways to make more money, Allan R. Stacey, vice president and manager of Sunland-Tujunga Telephone Co., Sunland, Cal., advised his listeners to "merchandise" and considered some ways to add revenue other than the usual conversion to dial and automatic toll ticketing. It is sometimes the minor improvements in day-to-day operation which can produce astonishing additional profits, he said. In a down-to-earth talk he advised his listeners to examine their procedures so as to:

(1) Be sure miscellaneous rates are adequate and comparable to those of other companies.

(2) Be sure business interchanged with other companies supports itself and earns a reasonable rate of return.

(3) Merchandise the total telephone service product.

When Sunland-Tujunga reviewed its situation in the light of the above, they found their rates for service connection charges below those of Bell in California, and were able, within California, to increase such charges without a general rate increase application. Therefore business installation charges were increased $3.00 and residential installation charges $2.00. Where "practicable and commercial," supplemental equipment rates were also raised so they were not "bargain rates subsidized by other exchange users." Mr. Stacey emphasized the advantages of using cost studies as a basis for toll settlement. Under a cents-per-message form of settlement the Independent company loses more than does Bell for this type of uncollectable. However under a separated cost settlement the entire amount is ultimately recovered from the Bell, he said.

One way Sunland meets competition in communications is to enclose a bill insert with all toll statements carrying telegraph billings. This insert, for example, will show the customer that a telegram from the company's exchange to Portland, Ore., will cost him $1.45, while for only $1.60 he may have a two-way conversation on the telephone.

The Sunland company has produced tangible results by spurring their advertising directory company into increased effort. Revenues from yellow pages in 1956 increased 21 per cent, although business main stations had grown only 13 per cent. The company spent a total of $500 for added effort along these lines, which "paid off" in increased directory returns of $13,000 per year.

The need for merchandising was recognized by Sunland in a sales promotion campaign which over one year's time raised the percentage of residence extensions to residence main stations from 7.7 per cent to 11.4 per cent, with the percentage continuing upward. Sunland-Tujunga has made an effort to "sell color," charges $10 per colored installation over and above the charges for black instruments, and urges getting into and making profit on the color business before commission and public pressure force a price reduction.

Mr. Stacey offered suggestions on selling key equipment, upgrades, non-user campaigns, package selling, increase in credit extensions and increased installations of public paystations. By employing a "skip-stop" plan of collecting from paystations only once in three months, Sunland-Tujunga has reduced wages directly paid for paystation collection by 49 per cent,

NOW on 30 day delivery...

North low-cost divided

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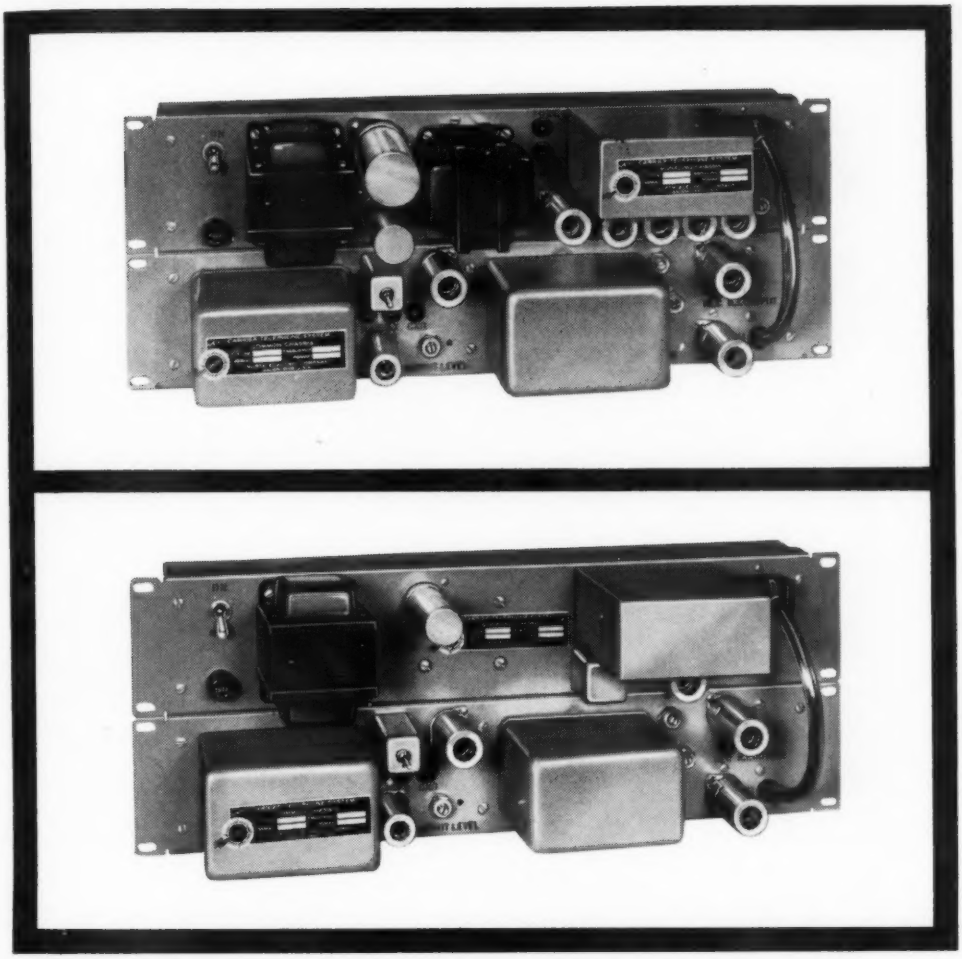

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low cost, high quality, minimum maintenance, simple line up

With the use of 5 channels of North Divided Ringing Carrier you can serve 60 telephones over 1 physical pair, with each phone ringing independently.

Added revenue can be yours immediately without the tremendous expense of physical line construction.

Available in Channels 1, 2, 3, 4 and 5 on 30-day delivery from

NORTH ELECTRIC COMPANY

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NORTH

XUM

and direct wages for clerical billing by 70 per cent.

As "tonics for small exchanges," J. T. Naylor, president of United Telephone Companies, Kansas City, Mo., told his audience to engineer wisely—hammer at exchange rates—push ahead on a consistent basis for a proper participation in toll revenues—"use our sharpest pencils on preserving the best long-range financial structure."

The following figures quoted by Mr. Naylor point up the extent of the small exchange problem, industrywise:

"In the Independent segment of the business 85.7 per cent of some 4,800 exchanges reporting to the USITA have fewer than 1,000 stations; just short of 40 per cent of all Independent exchanges reported were operating on a manual basis. The average size of the 1,925 Independent manual exchanges serving 1,765,797 telephones was 920 telephones per exchange.

"According to latest figures released by the Federal Communications Commission the manual development in the Bell System at the end of 1955 totalled 6,161,989 telephones in 1,991 communities; the average station development in these communities was 3,100 stations. The overall picture throughout the country displays 3,916 communities being served on a manual basis and having a total station development of 7,927,786.

"Irrespective, therefore, of the technological strides and progress general statistics for the United States might show for telephone development, it is apparent that in terms of numbers of communities and telephones affected the problem of producing universal mechanized telephone service in this country is equivalent in size to the total telephone development in the United Kingdom and is double any of the nearest numerical rivals of Canada, Germany, France, or Japan. Small exchange and mechanization issues are common and universal to the entire business in this country."

The small exchange has a three-fold problem: To try to provide universal 24-hour service in the face of the growing idea of an arbitrary wage floor without regard to localized balance between living costs and other products and services, and to secure financial resources for development.

Hugh Barnhart, USITA vice president, tells of that association's 60 years of service to the industry. W. F. Barnett of Vashon, president of Washington Independent Telephone Association, is on the left, and on the right, Francis Pearson, Washington Public Service commissioner.

Toward a solution of these problems, Mr. Naylor said: "Drastic though this may sound, I believe it is incumbent upon the industry in general to find ways and means to bring about adoption of the principle of statewide rate-making, instead of exchange-by-exchange rate-fixing, to make up cost differences."

"Statewide rate fixing recognizes an averaging process wherein certain rates and services compensate for the cost of other services which are in themselves non-compensatory. To put it very bluntly, certain services subsidize others; certain exchanges subsidize other exchanges. I personally believe such practices to be perfectly all right and essential. It is an inherent part of making telephone service a universal convenience."

Speaking of dividing toll revenues between Bell and Independent companies, Mr. Naylor said:

"In comparison with more advanced industries, such as the country's railroad systems, we are still in the toddling stage in properly formulizing the division of toll revenues. In this issue, probably the small exchange and the small company have a greater proportional stake than any other segment of the industry."

Toward greater simplicity in setting up cost studies, Mr. Naylor went at length into a suggestion that uniform average costs over the latest 3 to 5 year period for comparable wage and property units be applied on a statewide basis for all telephone plant and wage levels concerned in toll separation studies.

"Though there may be much weeping and gnashing of teeth at this revival of the doctrine of pricing equalization," he said, "I recommend . . . that we open our eyes to the demands of uniformly good service throughout the country by dividing tolls under uniform and current unit costs no matter who owns the plant."

Stating that such a proposal would "hold water any way it was tested," he went on to say:

"We are not suggesting any 'fuzzy' averaging approach such as costs per circuit mile, costs per telephone, or any vague or composite cost concepts. We

Howard Morgan, Oregon Public Utilities Commissioner, discusses adequacy of telephone services; Neal Hasbrook, secretary of the California Independent Telephone Association, is in the center; on the right, Allan R. Stacey of Sunland, Cal.

are suggesting solely that current unit prices for exact plant specifications and employe assignments be averaged on a statewide basis for the entire industry—not Bell costs nor average Independent costs, but the average by states for the business. Actual present level of annual charges on actual plant in service must be recovered in their due proportion from the toll segment of the telephone business if our performance standards are to measure up."

"The Adequacy of Service of Telephone Utilities," was named by Howard Morgan of the Oregon Public Utilities Commission, as the most important and difficult problem of all those facing Independent companies. It is one which changes with the physical and social standards of a particular community, the promptness and way in which the company makes repairs and re-institutes service, and the type of service it offers, as compared to the rates charged for it.

Failure to restore service promptly and—perhaps worse—failure to explain the delay satisfactorily, is one of the surest ways to convince the telephone patron that he does not have adequate service, Mr. Morgan said.

One of the main sources of customer complaints arises from the neglect, in some of the larger exchanges of the major Independent telephone companies, to recognize the tremendous increase in population in time to meet the service demands.

Another difficulty comes from delay in filing periodic reports which in turn sometimes means serious delay in obtaining construction funds for improved service; this automatically results in complaints to the regulatory agency, he pointed out.

Most important, advised the Oregon commissioner: *Never make a commitment* regarding a date to establish or improve service unless the company has made full research, and is absolutely certain the date can be met. An unkept promise, authorized or unauthorized, is a serious aggravation to customers any way you look at it, so . . . be careful what commitments are made, then be careful to keep every one you've made, the commissioner cautioned. In closing he said:

"Many of our small Independent telephone companies are providing complaint-free service at low rates. They may not necessarily provide metropolitan service to their customers, but in some way they have won and retained the confidence of their users. They put forth every effort to make repairs to the equipment if it is necessary, and when unable to meet a commitment, they follow through to make sure the customer or prospective customer has full knowledge and understanding of the reasons. These companies have convinced their patrons—and my office—that in the circumstances in which they operate they are doing the best possible job. That is the simple secret of good customer relations."

Shown in one of the hospitality rooms are (l. to r.): H. D. Fargo Jr., TELEPHONY's president; Mrs. Lyle Cross of Beaverton, Ore.; an unidentified woman; J. O. Smith and K. C. Tompers, both of San Francisco.

In the interests of better public relations, the telephone story should be told to the public by radio, television, newspaper, and by all possible contacts with unions, service clubs, chambers of commerce, etc., said Francis Pearson, commissioner, Washington Public Service Commission. When the facts are placed before them about the vast and growing population of the Pacific Northwest, the new and costly advances in telephony such as the new 2-5 numbering plan, etc., they will be willing to "go along" through this development and expansion period, Mr. Pearson thinks.

He also advised that monthly meetings of the Pacific and Independent companies could help dispose of many of the industry's problems before they reach the commission, and might be useful in developing a policy for handling exchange boundary conflicts, indicated as a step in furthering public good will.

The advantage of using cost studies as a basis for toll settlement was stressed by Neal C. Hasbrook, secretary of the California Independent Telephone Association. Cases were cited showing why separation studies were well worth while in spite of the time and money expended. He expressed the personal opinion that the time is not far distant when all California Independents will settle with the Pacific company for interchanged toll on the basis of cost.

Lambert Miller, Oregon association president, presides at a session.

It was not until 1951 that a cents-per-message schedule was established on the basis of actual costs, based on separation studies made in cooperation with the USITA by a number of Independent telephone companies. Settlement schedules were revised to their present form in 1956 and the basis for this revision was again a number of cost studies made by Independents in cooperation with the USITA.

If an Independent company is not receiving a share of the revenues derived from interchanged toll traffic sufficient to cover its costs of handling the traffic, it is subsidizing its toll operations through excessive charges for exchange service, Mr. Hasbrook pointed out.

In order to determine what actual toll handling costs are, it is necessary to separate investment in telephone plant and operating expenses between toll and exchange operations. If in addition to interchanged toll, the Independent also provides toll service wholly over its own facilities, it becomes necessary to further separate toll operations to interchanged and intra-company toll. Standard procedures to accomplish this separation have been established and published in the form of a separations manual, which has been developed over a period of years and at the present time is undergoing a thorough revision by a committee composed of state and federal regulatory personnel, representa-

(Please turn to page 36)

XUM

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"Look at it from the customer's point-of-view!"
So said a telephone man friend of ours—a man very successful in selling P-A-B-X, by the way. His formula: "Go out, look over a customer's plant, study the customer's operations, and see where P-A-B-X phones could make savings in steps, time, and money. Then make your proposal to the customer *in terms of these savings.*"

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Courts and Commissions

Carolina T&T Secures OK On $14,000,000 Bond Issue

Carolina Telephone & Telegraph Co., Tarboro, gained North Carolina Utilities Commission OK on July 23 for authority to issue and sell 14 million dollars worth of debenture bonds with proceeds of the sale being used to pay off short-term bank loans.

The 30-year bonds will be sold at an interest cost of 4¾ per cent and will become due Aug. 1, 1987. Estimated expenses and cost of issuing and selling the bonds are $68,000, including a $35,000 commission fee to Kidder, Peabody & Co.

The company in its petition stated that in connection with a continuing improvement and construction program it added 12,304 telephones during 1956, but there still were about 7,600 unfilled applications for service on May 31 of this year, mostly for rural services. The company's service area embraces 41 counties.

Kansas Service Question Returned to District Court

The Kansas Supreme Court recently refused to accept an appeal of a case involving telephone exchanges at Stockton (Southwestern Bell Telephone Co.) and Woodston (Woodston Mutual Telephone Co.), saying that the order on which the appeal was based was not applicable.

In effect, this decision returned the case to the Rooks County District Court for further consideration.

For several years the Stockton-Woodston area was served by exchanges at both towns. Controversy arose because a new type of service was installed at Stockton and two patrons, Edwin Stewart and R. A. Casad, filed an application with the Kansas Corporation Commission to have the dual service continued or a proper division of the territory be determined.

Then both the Woodston mutual and Southwestern Bell filed a joint application to discontinue the dual service and the commission granted this. At the same time the commission defined territories each company should serve.

The two patrons appealed this to the district court, which upheld the commission, but ordered the commission to review the facts on the division of the territory.

The commission held further hearings and again issued an order dividing the territory, which the two patrons appealed to the district court. The commission then moved for a judgment on the pleadings and record.

The court overruled this and the commission and the telephone companies appealed to the Supreme Court. The high court held, however, that this was not a final order and therefor not appealable.

New York Independent Seeks Purchase OK

The New York Pulblic Service Commission on Aug. 1 was scheduled to hear the petition of Independent Telephone Corp. for authority to acquire a majority of the common stock of the Jasper-Steuben Telephone Corp., and to issue Independent company common stock in exchange for it.

On the same date the commission was to hear the joint petition of Jasper-Steuben Telephone Corp. and Allegany Telephone Co., Inc., for authority to consolidate; and the petition of Independent Telephone Corp. for authority to hold 7,000 shares of common stock in the consolidated corporation.

OKs Ohio Service Switch

The Ohio Public Utilities Commission recently authorized Ohio Bell Telephone Co. to serve the territory now served by the Chandlersville Telephone Co. This followed a finding by the commission that the latter company was unable to furnish adequate service to its subscribers.

Ill. Company Asks Raises

The Kaskaskia Valley Telephone Co. on July 30 was to have a hearing before the Illinois Commerce Commission on a schedule of proposed rate increases for its Keyesport and Patoka exchanges.

Authorized Dial Service Rates in Texas

Southwestern States Telephone Co., Brownwood, Tex., on July 25 converted its Goldthwaite exchange from common battery to automatic operation and secured in conjunction a new schedule of rates, which will result in additional annual revenues of $12,138.

There are 647 stations in Goldthwaite. The exchange, with 500 lines and 800 terminals, is unattended, having Brownwood as master office

The company reports that 79 per cent of its 120,000 telephones are now dial-operated.

Old and new rates for Goldthwaite are:

	Old	*New*
Business:		
One-party	$5.00	$8.00
Two-party	4.00	6.50
Residence:		
One-party	3.25	5.00
Two-party	2.50	4.00
Four-party	2.25	3.00
Rural (Eight-party):		
Business	4.50	7.00
Residence	3.50	5.00

Minn. Commission OKs Rate Raises for Independent

The Minnesota Railroad & Warehouse Commission on July 10 authorized the Chisago City Telephone Co. to raise rates at its Chisago City and Lindstrom exchanges, upon conversion of each to automatic operation.

Further improvement plans of the company include installation of a community dial office at Wyoming to serve the Stacy-Wyoming area with extended area service as follows:

Two-way between Chisago City, Lindstrom and Center City.*

Two-way between Chisago City, Wyoming-Stacy and Lindstrom.

Two-way between Wyoming-Stacy and Forest Lake.**

*Center City exchange owned by the Chisago County Mutual Telephone Co.

**Forest Lake owned by the Northwestern Bell Telephone Co.

Upon completion of this project sometime in August 1958, the total investment or fair value—including mate-

rials and supplies and working cash —is estimated to be $484,000. Rates for dial service will raise net operating revenues from the present $44,385 to $85,351, and will eliminate the present deficit of $7,318 and produce net income of $23,406, a return of 4.83 per cent. The Chisago City company serves some 759 local and 549 rural stations.

The present rates for manual service and the future rates for dial service at the Lindstrom exchange are:

	Manual	*Dial*
Business:		
One-party	$7.20	$8.60
Two-party	6.25	7.50
Rural multi-party ..	4.85	6.00
Residence:		
One-party	3.60	5.00
Two-party	2.85	4.25
Four-party	2.45	3.75
Rural-multi-party ..	3.40	4.25

Approved dial service rates for the Chisago City exchange are the same as those for Lindstrom.

As of May 1, 1957, the operators' wages at Chisago City were increased $3,310 on an annual basis; in order to recover part of the loss resulting from this increase in wages, the company proposes an increase in the present rates for Manual service. While this increase in manual rates will result in an operating deficit, the company proposes to assume the loss until dial service is made available, the commission stated.

Operating revenues under the proposed interim rates will approach $48,314, and the deficit will be reduced to $3,557.

OK Wisconsin Bell Raise in Milwaukee, Lower Toll Rates

Wisconsin Telephone Co. received approval on July 24 from the Wisconsin Public Service Commission for an increase in rates in Milwaukee, and a reduction in long distance rates within the state. Reduced long distance rates will go into effect on Sept. 21, a spokesman said.

The commission authorized the company to increase its local exchange rates by $4,603,000 and to reduce long distance telephone rates inside the state by $2,351,000.

The net effect of the order will be a $1,085,371 increase in net annual operating income. Milwaukee increases include a maximum of $6.25 for one-party residence service.

The company, in a statement, called the order "disappointing."

The statement said that the commission approved in its entirety the company's request for reductions but granted only a part of the proposed increases, so that the net increase in the company's revenues is $2,252,000 —"one-third less than we requested."

Asks N. C. Commission OK On Financing Moves

North State Telephone Co., High Point, asked the North Carolina Utilities Commission on July 25 for permission to permanently "freeze" $350,000 of its surplus funds into capital stock "to improve and stabilize" its capital structure and financial position.

The company in its petition said it proposes to borrow $500,000 to finance further expansions and improvements to its system. It said that during the past 10 years it has more than doubled in size, increasing its number of telephones from 11,500 to 29,500.

1975 May See 26 Million Independent Telephones

If present population growth and economic trends continues as they are generally expected to do by the country's leading economists and statisticians, the Independent telephone industry, which now serves approximately 9½ million telephones, may be serving nearly 12 million telephones by the end of 1960, and may have in operation some 26 million telephones by 1975.

These projections appeared in the United States Independent Telephone Association member letter dated July 26, and are based on analyses for the telephone industry as a whole. The figures represent market potentials that may be realized if promotional efforts are geared to tap the prospective economic growth of the country, the USITA stated. If all the expected conditions hold true to their course, the total telephones in the U. S. by 1975 may be more than 2½ times the total in service in 1956. Over one-half of this potential gain is likely to consist of residence extensions.

This long-term outlook includes the following projections of basic economic and population data:

	Gross National Product (Billions)	*Personal Income (Billions)*	*Population (Millions)*
1960 ...	$460	$365	179
1965 ...	550	435	192
1970 ...	650	515	206
1975 ...	760	600	222

There are a number of "ifs," "ands" and "buts," of course, in these pro forma projections. For example, it is assumed that there will be no major war or major depression.

Other statistical figures recently released indicate that conversions to automatic in both segments of the industry are going on apace. At the beginning of this year, Bell had 89.5 per cent dial telephones, the General Telephone System 79.1 per cent, and the Independent industry as a whole, 69.2 per cent.

Of the 10,870 Independent *exchanges* 44 per cent are still magneto, 14 per cent are common battery, and 42 per cent are automatic. So there is a lot of converting to be done, a lot of money to be raised, a lot of equipment to be produced—and a lot of prosperity to be enjoyed, observes the USITA.

Obituary

WILLIAM J. O'CONNOR, 68, of New Canaan, Conn., retired assistant to the president of American Telephone & Telegraph Co., died July 26.

Mr. O'Connor was a St. Louis newspaperman and vice president of Southwestern Bell Telephone Co. before joining AT&T in 1927. He retired about seven years ago.

His St. Louis newspaper career was with *The Globe-Democrat*, *Post-Dispatch* and the old *St. Louis Times*.

Mr. O'Connor joined Southwestern Bell in 1917 as publicity manager and was named general publicity manager two years later.

Moved up to the post of assistant to the president a short time later, he organized the utility's advertising department. He became a vice president in 1926.

A year later, he went to AT&T as assistant to Vice President Arthur W. Page. In 1930, he was named assistant to the president and served in that post under President Walter Gifford.

Surviving are his wife, the former Miss Edna Schuermann; two brothers, James J. O'Connor, St. Louis, and Michael F. O'Connor, Parsons, Kan.; and four sisters, Mrs. A. H. Donnewald, Shawnee, Okla., and Mrs. Patrick Crayhon, Mrs. Edward J. Doyle and Mrs. Mat J. Holland, all of St. Louis.

Minnesota Sale Authorized

The Minnesota Railroad & Warehouse Commission on July 22 authorized the New London Telephone Co., Inc., to purchase from J. M. Bolstad the entire property of the New London Telephone Co. serving approximately 613 stations.

To Observe Telephone Week

Seven governors have now issued proclamations designating Sept. 8-14 as Independent Telephone Week. They are the governors of Ohio, Florida, Maryland, Missouri, Tennessee, Indiana and Oklahoma (TELEPHONY, July 27, p. 44).

Finds Utilities Securities Good Long-Term Investment

"The twin spectres of inflation and tight money are haunting the utility market," says *The Value Line Investment Survey* published by Arnold Bernhard & Co. "Spectres, uncertain at best, can be exaggerated."

The mid-June drop in prices of electric utility stocks appears to have resulted from investors' fears as to the impact on earnings of sharply higher interest rates and inflation. These are crucial factors, the Value Line Survey states.

A third influence—the Florida order reducing the rates charged by the nation's foremost growth electric power company—proved to be a psychological catalyst that touched off the general price decline, though in itself of little general significance.

Examining the probable future impact of high interest rates and inflation, the Value Line Survey notes:

(1) Utilities are likely to be able to keep pace with inflation—through excellent management, improved equipment and resulting operating economies. In the postwar years they have done so consistently. In the long run, moreover, inflation also boosts the companies' rate bases.

(2) The average utility can take rising money rates in its stride—net interest expense of public utilities is still less than 4 per cent of gross revenue, the same proportion as in 1952. Rates for new money tend to fluctuate to extremes. At present relatively high, the average of future rates is likely to be somewhat lower.

The Value Line Investment Survey further concludes: "The utilities do not carry the same degree of risk as most stocks. Their dividends are safe, their earnings almost recession-proof.

"They have not been bid up to prices out of line with historic norms of valuation. In a potentially dangerous market of capital gains seekers, the speculative frenzy has passed them by.

"At present prices, the conservative long-term investor can have more confidence in utilities than in almost any other equity group."

Safety Council Data Sheet Advises on Use of Winches

Industry has grown greatly during the past 50 years. And with its growth have come new operations, new equipment—and new problems.

Such a problem is how to use truck-mounted power winches safely, the National Safety Council points out.

Truck-mounted power winches are employed by public utilities companies and the construction and petroleum industries, to name a few, and are used to move, raise or lower heavy loads, for pulling cable or for general work.

Many new trucks come equipped with the winches. According to George MacDonald, senior consulting engineer in the council's industrial department, the new trucks have brought this hazard: drivers frequently operate power winches without prior training, which is, according to MacDonald, "as important as learning to drive the truck."

Moreover, in the past only large companies had truck-mounted power winches, and these concerns had a man trained and assigned to operate the equipment. Now, though, a truck driver may find himself responsible for its operation.

How can the danger be lessened? Here are a few specific practices and ideas as given in Council Data Sheet D-441—one of many prepared periodically by safety engineers:

(1) Persons not familiar with the controls of truck-mounted power winches first should check control lever positions against an instruction plate, which should be mounted in full view of the operator and should indicate various operating positions.

(2) A lock or latch should be provided to keep the power take-off lever in "off" position while the truck is being driven.

(3) If a clutch engages so slightly that there is danger of its disengaging, air or vacuum devices can be used to hold it engaged and prevent a load from being dropped.

"Regardless of the type of installation—back-of-cab or front-of-cab—drivers must be trained to follow a few simple winch-operating safety rules," the safety engineer says.

"This may be a new hazard for you. Only education can remove it."

WASHINGTON-OREGON CONVENTION

Concluded from page 31

tives of the Bell System and of the Independent telephone industry.

Two major changes of policy have been made in recent weeks affecting borrowers of REA telephone loans, David A. Hamil, REA administrator, explained, the first affecting a change in loan security requirements, the second concerning payments of interest.

To date the REA has made loans to 336 commercial companies and 204 cooperatives, which will total about 382 million dollars and benefit upwards of 825,000 rural subscribers. Washington and Oregon are two states in which the percentage of farms with telephone service stands well above the national average. Washington has more than 73 per cent and Oregon more than 71 per cent. REA has made loans totaling $12,839,000 in the two states.

The following directors were elected by the Oregon association: M. F. Berglund of De Lake; Lowell Brown of Silverton; J. Cavanaugh of La Grande; Raymond M. Crockett of Redmond; Lyle Cross of Beaverton; Rodney Cummings of Philomath; James W. Damon of Mt. Vernon; Floyd Day of Estacada; Earl Dean of Hood River; John H. Dillard of Nehalem; Don Gibbs of Cave Junction; D. O. Hood of Medford; Ernest R. Hood of Portland; Leon L. Roome of Halsey.

The Oregon directors elected the following officers: President, Lambert Miller of Sunnyside; vice president, L. E. Scott of Lebanon; secretary-treasurer, Leslie A. Gritten of Everett, Washington.

The following board of trustees were elected by the Washington association: W. F. Barnett of Vashon; Lee Bolles of McCleary; Don Childers of Sunnyside; L. M. Curry of Yelm; Ray Dalton of Everett; B. L. Gaines of North Bend; Norman Howerton of Ilwaco; Maurice Hull of Forks; W. R. Jarmon of Spokane; Milton Larson of Lynden; W. G. Pottratz of Cowiche; J. R. Reynolds of Naches; R. E. Rudolph of Ellensburg; O. E. Serwold of Poulsbo; G. J. Stover of Mount Vernon.

The Washington board of trustees elected the following officers: President, Maurice Hull of Forks; vice president, R. E. Rudolph of Ellensburg and secretary-treasurer, J. W. Baker of Spokane.

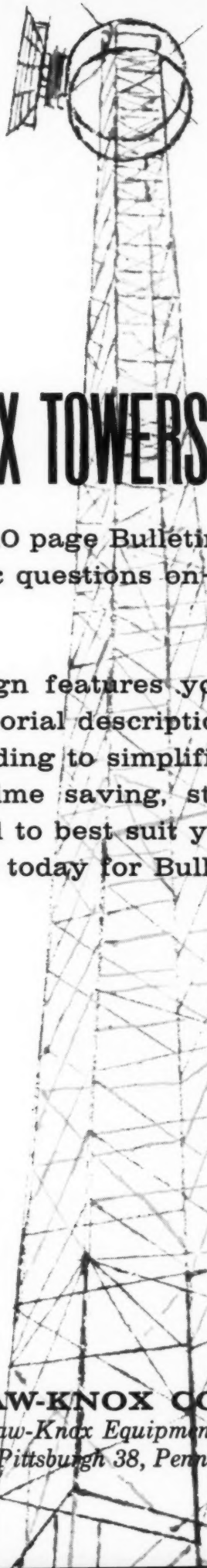
Cut Over Northern Ohio Exchange to Full DDD

Northern Ohio Telephone Co., Bellevue, O., on July 7 cut over to full Direct Distance Dialing (DDD) at its Medina exchange.

The company reports there are only three other exchanges in the entire United States with full DDD and automatic identification of multi-party lines. The three mentioned are located at Pekin, Ill., Gibsonia, Pa., and Gilroy, Cal.

Mexican Company Asks Loan

TELEPHONY's Mexico correspondent reports that Telefonos de Mexico, the country's major private telephone company, is seeking a 15-million-dollar loan from the International Reconstruction Bank to finance the installation of 100,000 telephones throughout Mexico.



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TRAFFIC LINE AND TERMINAL ASSIGNMENT

Continued from page 22

number "changed to" or the number for referring of calls on discontinued terminals is entered in the remarks column for intercepting record purposes. The current allotments are entered at the bottom, above the class of service totals. The totals of all the connector record forms may be combined to obtain the total working main stations by class of service.

The following symbols are suggested for use on both assignment forms. Others may be developed as required:

On Both Records

/ (Stroke Mark)=A working terminal for the class of service of the column in which entered.*

A (23)=Terminal assigned on Release List No. 23 for class of service of the column in which the "A" is entered.*

V=Vacant Terminal and available for assignment.***
(In Traffic Classification column on line record.)

H=Heavy usage line.**

L=Light usage line.**
(The H & L on the line record indicates originating usage, and when on the connector terminal record-terminating usage.)

On Connector Terminal Record Only

D=Disconnect.*

C=Number Change.*

M=Move.*

7-1-56=Date of disconnect, number change, etc. No refer of calls.***

AL-2-2111 7-6-56=Refer calls to AL-2-2111 and date of disconnection or number change.***

DNP or NP=Do not publish number.***

*—In Class of Service Column.
**—In Traffic Classification Column.
***—In Remarks Column.

NOTE: Abbreviations "ref. to," "Chg. to" and the symbols "D" and "C" shown in the "Remarks" column, may be omitted if desired.

Entries are made in the assignment records with pencil, so that they may be readily erased. The change of the status of a line equipment or connector terminal (from non-working to working, or from working to non-working), *should only be made from an "in", "out", or "change" service order for which the work called for has been completed (viz., the order "Okayed") and immediately after the order is Okayed.* The column totals should be brought up to date at the end of each month by recounting the pages. Totals may be corrected as each order is "worked" in the records, but this practice is conducive to errors where there is much station movement. The constant changing of the totals wears into the paper at the bottom of the form. This may be taken care of by placing a strip of cellophane ("Scotch") tape at the bottom edge of the form over the spaces used for totals. The glossy surface of the "Scotch" tape should be removed by rubbing with a typewriter eraser, so that pencil marks will adhere to the cellophane tape.

Assignment Releases

Lists of line and connector terminals to be used for connecting new or moved services should be prepared periodically by the traffic assignment clerk. These lists are for use by the plant assigner in obtaining the line and terminal assignments to be entered on the service orders. This is done by listing, under the class of service headings, the specific line equipments to be used for each class of service. Likewise, similar lists under each class of service headings are prepared for the connector terminal assignments.

The quantity of assignments that will last from one to two or three months may be listed if sufficient equipment is available. These assignment releases are obtained by inspecting the assignment records and making releases for the various classes of services in those groups where the working lines or terminals in the classes are below the allotments, bringing each group up to the allotments proportionally. That is, the "working" plus the "assigned" in all the groups of the same size and capacity should be kept equal.

When a line or terminal is entered on the assignment release list, an "A" should be entered opposite the line equipment or terminal number in the record, in the appropriate class of service column, with the serial number of the assignment list encircled in an adjacent column. *This "A" is removed only when a completed (Okayed) service order which uses the equipment is worked in the record or the assignment is recalled by the traffic clerk.* The assignments are to be used from the lists by the plant assigner, from the top down. Therefore, the lists should be made up with the assignments to be used first entered first on the lists. The lists should be dated, given a serial number and forwarded to the plant assigner who enters the assignments on the service orders.

In a small office, the plant assigner may be the same person who maintains the "traffic" assignment records. The lists are, however, essential tools for clerical efficiency and for insuring a good equipment balance. It is much more effective to determine the releases throughout all groups at one time, rather than to search the line and terminals records for an assignment when each service order is being blocked.

When a class of service balance exists in the line groups, disconnected line equipment may be entered on the assignment release lists (to be used for the next period) at the time of "working" the out orders in the assignment record. For example, when a disconnect order for a 1-R service is being "worked," the disconnected line equipment is entered on the release list under the "1-R" heading. An "A" and the release list serial number are entered in the line record, after erasing the disconnected telephone number. The line equipment releases for the following period can be completed when the lists are required, by adding the additional line equipment needed for the net growth for the succeeding period. Clerical work is thus reduced, but the class of service balance is maintained.

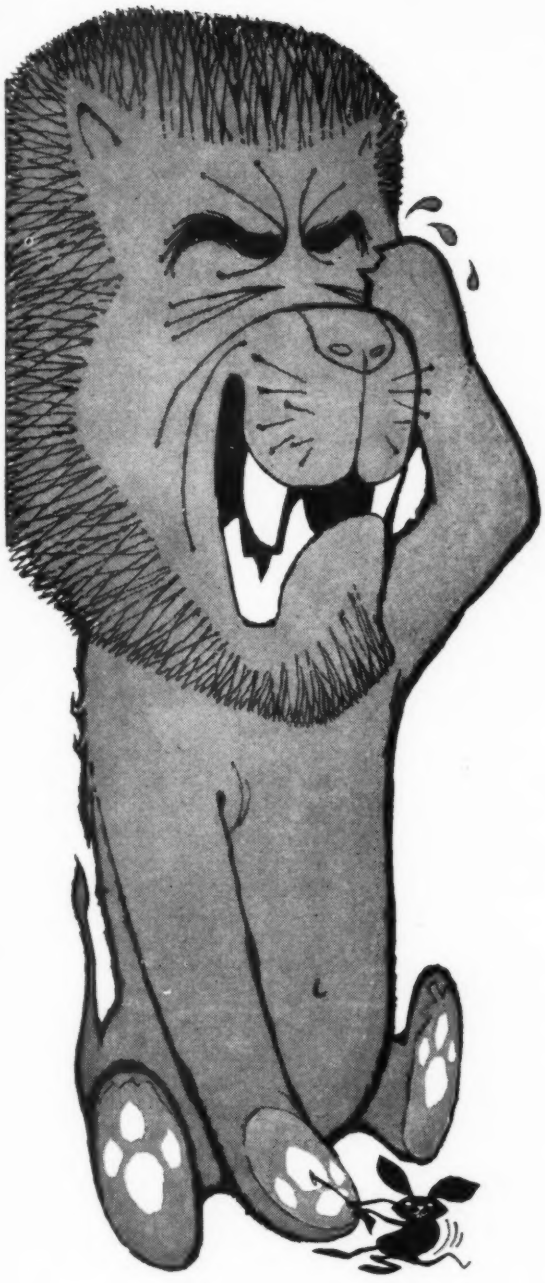
The person "blocking" (entering assignments on) the service orders should use the assigned lines and terminals from the lists from the top down, and rule out the assignment and enter the service order number. An exception to using only the assignments from the top of the list is made where orders are being blocked, so as to result in short frame jumpers. Where a routine to effect short frame jumpers is being followed, assignment lists providing a considerable number of choices are, of course, necessary.

When the assignment lists are near exhaustion, new lists are called for, the old lists being returned to the traffic assignment record clerk.

Personnel Responsible

The traffic line assignment job, because it is vital to rendering proper dial switching service, is a traffic responsibility and may be under the supervision of the traffic manager, the traffic engineer or the chief operator, depending upon the size of the organization. Many companies are appointing "dial chief operators" who report to the traffic manager or the regular chief operator. Responsibilities of the "dial chief operator" include maintaining the traffic line and terminal assignment records, determining allotments, issuing the assignment release lists, furnishing the changes for or maintaining the intercepting records, taking automatic equipment "peg" and usage counts, maintaining traffic load records, load balancing, etc.

(Please turn to page 42)



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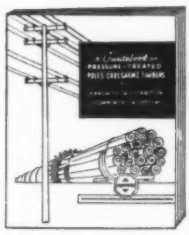
And Koppers Wood Preserving Division, as the leading producer of pressure-treated forest products, does just that. It has set up research, engineering, manufacturing and control procedures which assure decades of trouble-free service for the wood products pressure treated in plants across the nation.

That's why when you see the Koppers brand on poles, crossarms and timbers you have assurance of long service life with minimum maintenance and lowest-per-year cost.



IF YOU SPECIFY OR BUY— You'll want this useful handbook, "Pressure-Treated Poles, Crossarms, Timbers for Transmission, Distribution and Communications Systems." Write:

KOPPERS COMPANY, INC.
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1457 Koppers Building
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KOPPERS POLES

FOR NEARLY HALF A CENTURY — SERVING AMERICA'S TRANSMISSION, DISTRIBUTION AND COMMUNICATIONS SYSTEMS

Fair director, volunteer fireman, telephone man...

If you happen to know Bob Croushore, you'll recognize him as the smiling young man on the right across the page. Bob's well known in Greensburg, Pa., not only as a telephone man but also, among other things, as president of the local fire company, a fair director and a deacon in his church.

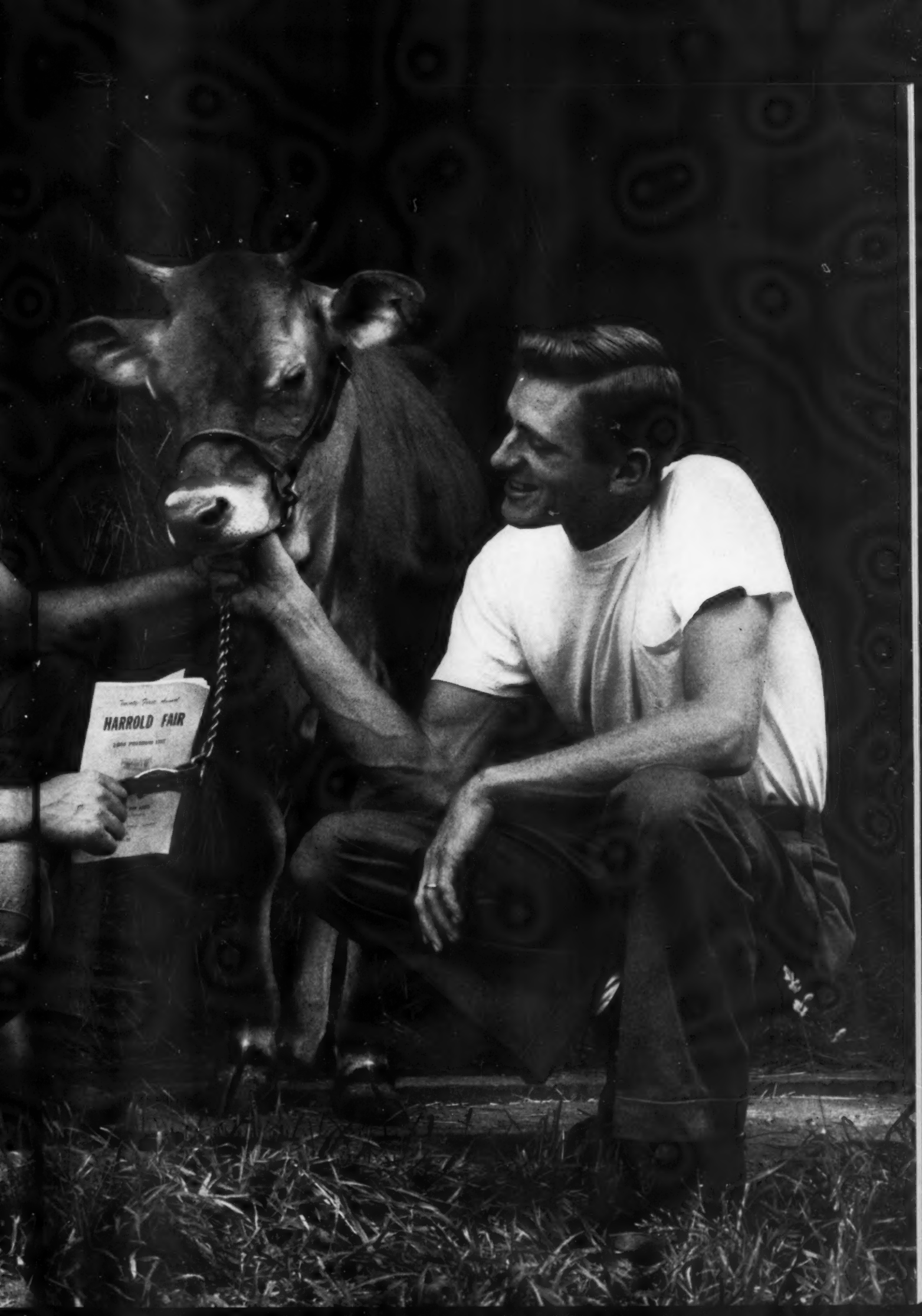
This month millions of readers across the country will meet Bob in a Bell System advertisement called "Telephone Ambassador-at-Large." This ad is one of a continuing series in national magazines, designed to acquaint the telephone-using public with the calibre of men and women who provide the service. We believe that these ads give recognition to the friendly, neighborly people who serve the public in all of America's telephone companies.

Working together to bring people together

BELL TELEPHONE SYSTEM

Bob takes professional pride in his work. When he installs a telephone he knows how helpful it will be to the customer year in and year out.

PHOTOGRAPHS BY ANSEL ADAMS


HARROLD FAIR

The actual association of the assignment releases with the service or work orders is a plant function and is done by a "plant assigner" who also assigns the cable pairs to the service order or determines on what existing line a new or moved party-line station may be connected. The plant assigner usually assigns and maintains the record of the bunch blocks and other miscellaneous equipment which does not affect the traffic loading of the central office. The job titles in common use are confusing in that the plant assigner is actually the line assigner, while the traffic line assignment clerk may only release the central office terminals in list form, making no individual assignments.

In small organizations, it may be efficient to have the traffic assignment clerk also enter the central office line and terminal assignments on the service orders and possibly also assign outside cable pairs. In large, as well as small offices, it is desirable to have the traffic assignment records located and maintained at the plant test center, or the plant service order center, so that the flow of orders is simplified and the traffic line equipment record is available to the test desk for determining the telephone numbers of "permanents," etc.

Newly Added Groups

When additional line and/or connector terminal groups are installed and ready for use, new allotments for all groups, including the added ones, should be prepared and new assignment release lists issued. The assignments in the new groups should be placed at the top of the release lists so that the "fill" in the new groups will be brought to the office average (allotments) as soon as practicable. It also may be necessary, if the line equipment addition is sizable, to immediately transfer lines from the older line groups to the new line groups, in order that the new first selectors and the trunking therefrom may immediately participate in carrying the office load.

However, if the new first selectors are arranged to receive some traffic from the old line groups (by means of the line equipment to first selector cross-connections), these line transfers are not necessary unless the old line groups are heavily overloaded and need relief.

Individual Assignments for Business Lines

Line and terminal assignments are generally placed on service orders as they are taken in sequence from the assignment lists. The law of averages spreads the heavy and light usage subscribers of each service class more or less evenly throughout the groups. When there is more than one trunk-hunting connector group provided, an effort should be made to avoid having two establishments of the same type in the same PBX connector group.

For example, a department store, large hotel, or large manufacturing plant should not be assigned to a connector group in which the lines of such an establishment are already working. The assignment record for trunk-hunting connector groups should, therefore, show the type of business of each PBX or multi-line system. Also, the lines or trunks of the same subscriber should be spread over different line groups so that call blocking in one or two line groups would not affect all of his lines.

It is desirable to assign PBX trunks to central office line equipments associated with finder bank contacts in the lower levels. This will result in a minimum wait for dial tone by a PBX or PABX station calling a central office number.

In a trunk-hunting connector group, the two-way trunks to a PBX System are generally terminated at the PBX so that the last trunk (of a group) from the connector bank is the first choice from the PBX. These first choice trunks from the PBX will, therefore, have a high calling rate in the busy hour and will create high traffic for the central office equipment.

Conversely, the trunks which are first choice trunks to connectors for outward calls to the PBX, will generally be required to carry a low amount of traffic to the central office from the PBX.

It is, therefore, advantageous to so mark these trunks in the line records and evenly distribute them, taking advantage of this known load difference as between individual lines of the same class when balancing line groups for loading. This method will later be described in detail. Assignments for all, or for the larger PBX's (say those over two or three trunks in size), should not, therefore, be included in the assignment release lists but should be individually selected after careful reference to the terminal and load records.

The assignment of certain types of individual business lines, such as a line to a theater box-office, should be scrutinized to be sure that they are not placed in a connector group already having a similar type line. It may be feasible in small offices, or in offices having a low rate of station turn-over, to individually select assignments for all business stations to avoid having lines of similar traffic characteristics in the same connector or line group. This, of course, requires judgment.

Initial Assignments on Conversions

The assignment practices discussed in the foregoing assume that assignments, with the exception of those for certain PBX Systems, etc., will be made only on the basis of distribution by class of service and that no attempt will be made to distribute assignments on a "traffic classification" basis; that is, by distributing individual lines within a service classification by calling rates, or by traffic usage. This latter is not feasible to any extent in an established automatic office, since most of the assignments are for new subscribers whose future usage is unknown. However, when balancing automatic office groups, as described later, heavy users are located for transferring between groups and these may be marked as such in the line records with an "H" for future consideration in subsequent group balancing. On the other hand, when converting a manual office to automatic operation, special efforts are required in the initial automatic office assignments to make sure that the traffic in the new automatic office will be sufficiently well balanced to insure good initial service. Therefore, it is best to determine as far as practicable, before cut-over, the heavy and light calling rate lines and to distribute them evenly throughout the equipment groups. Class of service distribution must, of course, continue to be equalized.

Bulletins published by automatic telephone manufacturers cover in detail the assignment practices which should be followed when "cutting over" from manual operation to automatic operation. Such bulletins also discuss step-by-step equipment arrangements which have a bearing on assignment requirements; for example, how large PBX trunk groups are served, how night numbers may be provided, test number assignments, etc.

Traffic Load Balance

With the various classes of service evenly distributed, a much better traffic balance should automatically result, as compared with an uneven class of service distribution. However, there still may be some traffic unbalance due to two or more extra heavy users falling in the same group. The usage balance in the line groups should be watched by reading the "all trunks busy" (ATB) registers. A good plan is to read these registers weekly and enter the scorings (subtractions) for the

(Please turn to page 45)

NUMBER 17
Toll grade. These insulators are employed for all exchange circuits and for all toll and trunk circuits that do not exceed ten miles.

Dependable ...in emergencies

Dependability is the story of Hemingray insulators. On the line, you can depend on their strength and uniform high quality . . . when you order, you can depend on prompt delivery of what you need, when you need it.

Since 1870, Hemingray insulators have been the standard for quality on telephone and telegraph lines the world over. Dependable Hemingray Glass insulators today carry most of the world's overhead telephone and telegraph lines . . . play a major part in helping to maintain our highly dependable communications systems. These insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

HEMINGRAY INSULATORS
AN (O) PRODUCT

OWENS-ILLINOIS
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construction and maintenance DIGEST

- **Ambidextrous terminal**
- **25-year battery**
- **3 ways better**
- **Wires' Shangri-la**
- **Profitable noise**

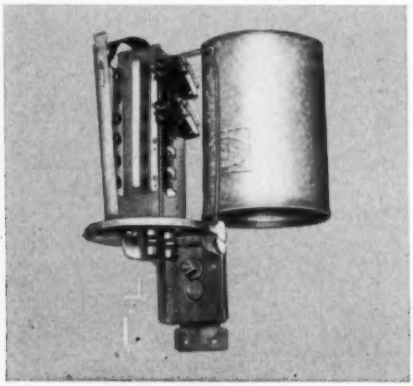
Published regularly to help you get the most out of your materials and supplies dollar

by C. J. Reynolds, Stromberg-Carlson Company

Two dividends are yours when you order supplies from Stromberg-Carlson. First, you get the protection of a double guarantee—ours and the maker's. This assures you of getting the finest products, backed by our 63-year reputation. Second, your support is used to further the art of telephony. We're knee-deep in this industry as a full-time job, not a side line, and your supply business plays a big part and helps us continue our research for new and better telephone equipment.

Versatile terminal for plastic cable installations

If you're installing plastic cable, you'll want the S-20V pole cable terminal, with its two cable entrances, each of which is arranged to accommodate compression couplings ranging from 6 pair to 51 pair in size.



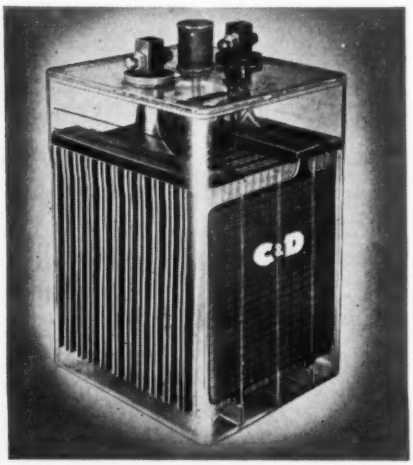
Easy accessibility of this pole cable terminal interior makes it ideal for use with plastic cable.

When only one cable entrance is required, you close the other entrance with a standard pipe plug. These features, combined with the flexibility of Cook Electric Company's H-20 protector units, make the S-20V protected pole cable terminal probably the most versatile pole cable terminal available.

Battery will still have its pep when 1982 rolls around

It will last 25 years—in full float service! That's the life expectancy of C & D's PlastiCal (lead-calcium grids) telephone battery.

You get this extra-long, trouble-free operation because C & D Batteries, Inc. use an exclusive suspended and supported plate construction.



In full float service, this telephone battery stays on the job a quarter of a century.

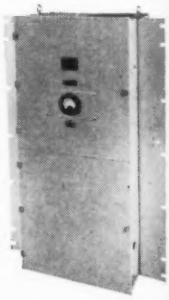
Illustrated here is a typical C & D telephone battery with a 660 A.H. capacity. When ordering this 25-year battery, specify PCE-660.

When you find that a 14-year expectancy meets your needs, you can get dependable operation from a C & D PlastiCell (high-tensile lead alloy grids) battery. For a PlastiCell with capacity of 660 A.H., specify CE-23.

You can order either of these C & D telephone batteries, plus other capacities, from your Stromberg-Carlson representative. Ask him about extra-long-life power supply with C & D Batteries.

Raytheon Rectricharger® Battery Chargers—Complete Line 3-400 Amperes

Entirely redesigned new Raytheon Rectichargers offer three major improvements:



New Raytheon battery chargers feature ± 1% no-load to full-load regulation

1. ±1% no-load to full-load stabilization prevents battery overcharging, minimizes gassing, lengthens battery life.
2. No audible hum at output terminals.
3. Most compact units on the market—wall or rack mounted.

Automatically compensated for rectifier aging, Rectichargers offer high efficiency, completely automatic regulation. No moving parts and self-protecting circuitry assure minimum maintenance, long life. Single and three phase, 3-400 amps.

Built by Raytheon, supplied to you by your Stromberg-Carlson representative.

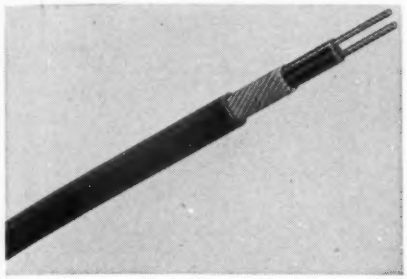
Here's a drop wire that hides its age

Samples of Whitney Blake Teleprene® (neoprene jacketed) drop wires were strung where they would get lots of weather. After nine years, they still looked fresh and undaunted – and tests showed that these wires would give years and years **more** of good service!

The jacket is a tire-tread type neoprene compound which provides excellent resistance to sunlight, abrasion, oils, acid fumes, alkalies and other corrosive chemicals.

XUM

Conductors have Teleplate coating: lead, to resist corrosion, and brass plating over the lead, to provide enduring adherence of the



Available in parallel (shown here), twin parallel and twisted pair types.

high quality buna rubber insulation to the conductor.

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory! It costs the subscriber **less** than a booth—and you get the revenue!

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

week on a form used as a "Load Balance Record." On such a form are entered the line group numbers from top to bottom on the left, with columns across the form for entering each week's ATB registrations. Groups 10 per cent or more above the average of all the groups of the same traffic capacity might be indicated with a red pencil mark; those in the 10 per cent under the average with a blue mark. The consistent heavy and light groups will thus be disclosed. Subscriber reports of no dial tone, or slow dial tone, which "test OK," may be obtained from the repair clerk and entered monthly for each group in a column, as a further indication of overloaded groups.

The traffic balance of connector groups must also be watched and the over and under-loaded groups located. A usage count of all connector groups (count of connectors simultaneously in use) is of course the best check, but is time consuming. Another method is to employ last-trunk-busy (LTB) registers on the preceding selector levels. These may be permanently wired or may be "portable" by having six or eight registers mounted on a strip to be hung at the selector board terminal assembly bay, with cords and clips for connecting to a lug of the last (common) trunk of the selector-to-connector trunk group.

These registers may be read weekly as for the line group ATB registers. The readings should be recorded on a form to permit group comparisons. The connector peg-count calls may be helpful for comparison, but because of variations in holding times on incoming calls to different stations, are not too reliable.

Busy-hour usage of all line and connector groups should be taken about once a year during the busy season to determine the actual traffic (TU or CCS) load being carried in relation to the equipment capacity. This is done by counting the average simultaneous usage of the line finders and connectors in each group at one or two-minute intervals during the busy hour or hours. This count may be made manually or automatically by the use of totalizers or Trafficorders.

Correcting Unbalances

The following discussion of balancing line groups by line transfers applies, of course, only to offices equipped with an intermediate distributing frame, or some other means for cross-connecting between the line equipments and the connector terminals. All terminal-per-station offices and many terminal-per-line offices are so equipped. In those terminal-per-line offices in which the connector terminals are permanently cabled to the line equipments, line transfers for load balancing of the line equipment groups are generally not practical because of the necessity of also changing the connector group which involves telephone number-changes. Obviously a line IDF is essential to load balancing of line groups. Where one is not provided, it is all the more important that lines be assigned, so as to result in good balance.

In order to correct traffic unbalance in properly assigned line groups, one or two subscriber lines having heavy usage should be transferred from a heavily loaded group to a light group and *replaced at the same time by transferring the same number of lines of the same class of service from the light group back to the heavy group.* The heavy usage subscribers must be located by observing which lines have the most use during the busy hour.

The practice of transferring a number of lines of unknown usage from the heavy group to other groups, in order to lighten the traffic load by reducing the number of working lines, should never be employed. To do so results in an unbalance in the number of working lines and class of service as between groups and, if vacated line equipments are left idle, line equipment becomes unavailable. If these requirements are re-assigned, the overload will generally reappear, since it would be only by chance that the heavier than average lines were transferred out. A balance in the number of working lines per group must be maintained, as well as a balance in traffic load, if full utilization is to be made of the equipment.

Connector group unbalances cannot ordinarily be corrected by transferring main stations between groups because such transfers require subscriber number changing. If the connector shelves have spare switch positions (spare banks) and if a few extra or "floating" connectors are provided, an extra connector may be temporarily placed in the overloaded group, or a connector temporarily moved from a very light group to a heavy group. If there is no imminent shortage of connector terminals, assignment of additional stations to an over-loaded group might be temporarily discontinued.

Conclusion

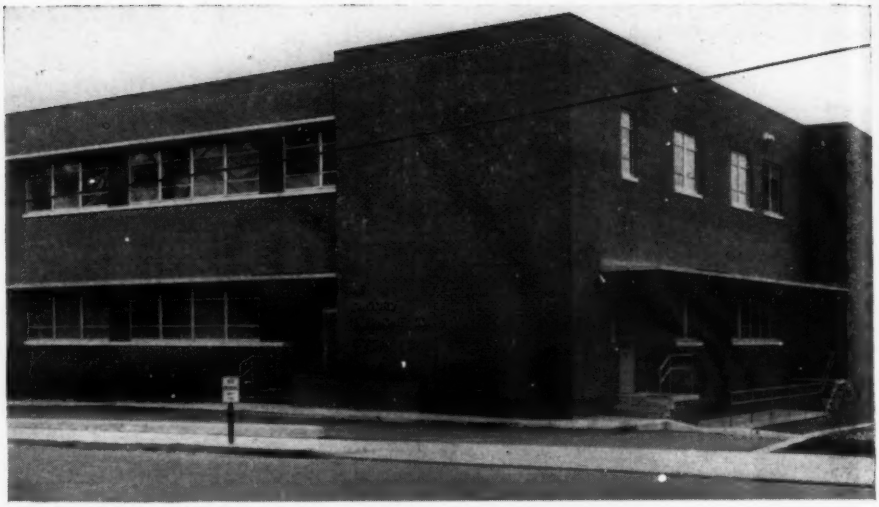
The systematic employment of good line assignment practices, as outlined in this article, should not appreciably increase clerical costs but will effect savings in the use of switching equipment and result in improved dial service to the customers.

Lu Ray Staff Joins C&D Buffalo Office

Lu Ray Staff of Boston, N. Y., has joined the Buffalo office of C & D Batteries, Inc. He is the son of L. H. Staff, who has headed the Buffalo office since it began operations back in 1949.

C & D manufactures industrial storage batteries for powering electric lift trucks for the telephone industry; and for railroad, mining, control, and other industrial applications.

Prior to joining his father in the battery business, Lu Ray Staff was associated with the Buffalo branch of Ford Motor Co. and Bethlehem Steel Co.



The Concord Telephone Co. has culminated a 4-million-dollar expansion program with the opening of an ultra-modern exchange building and operator toll dialing center at Concord, N. C., which will serve more than 31,000 stations when present plans are completed. The new Automatic Electric equipment was inaugurated with a transcontinental call from Concord Mayor James McCachern to the mayor of San Francisco.

Philco Names Spielman A Director of Engineering

Sterling C. Spielman on July 18 was appointed director of engineering for Philco's government and industrial division.

In making the announcement, Henry F. Argento, vice president and general manager of the division, said Mr. Spielman will have full responsibility for all design and development engineering activities of the division. He will be assisted by Frank D. Peltier, who was named director of engineering planning.

Mr. Spielman has been director of electronic engineering for the G & I division since 1951. In this capacity he was responsible for supervising all electronic development and design engineering.

He joined Philco as a factory engineer in 1933 after graduating from Drexel Institute of Technology. He was chief engineer in charge of television receiver design before joining the G & I division.

Mr. Spielman holds several patents in the field of electronics. From 1954-55 he was Philadelphia section chairman of the Institute of Radio Engineers.

He has served on various committees of the Radio Electronics Television Manufacturers Association and also is a member of the Institute of Navigation, American Society of Naval Engineers, American Rocket Society and American Ordnance Association.

He is a native of Linwood. Md.

Graybar Announces District Personnel Changes

Willard E. Henges, president of the Graybar Electric Co., Inc., announces the following appointments and transfers in district personnel:

Effective Aug. 16, E. E. Leavy, Mississippi Valley district manager at St. Louis, becomes assistant district manager at Los Angeles.

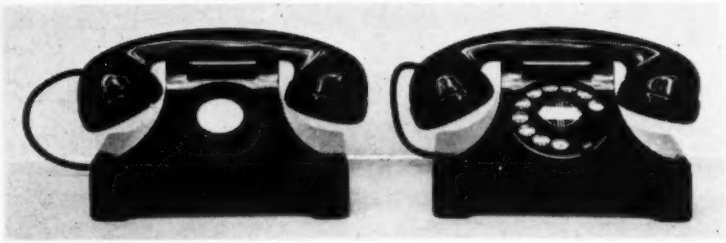
Effective Aug. 1, H. G. Cook, Wolverine district manager, becomes Mississippi Valley district manager at St. Louis.

Effective Aug. 1, D. A. Williams becomes Wolverine district manager at Detroit.

Effective July 1, W. B. Whaley becomes assistant district manager at Kansas City, Mo.

R. B. Sayre, vice president of Graybar, announced that effective Aug. 1, C. C. McGraw, Omaha branch manager, becomes manager, supply sales at Houston.

W. Frazier, midwestern district man-



NORTH ELECTRIC self-contained Handset Cradle Telephones. Completely remanufactured by the *DAN MAC PROCESS* to give the same appearance and service and carrying the same guarantee as new.

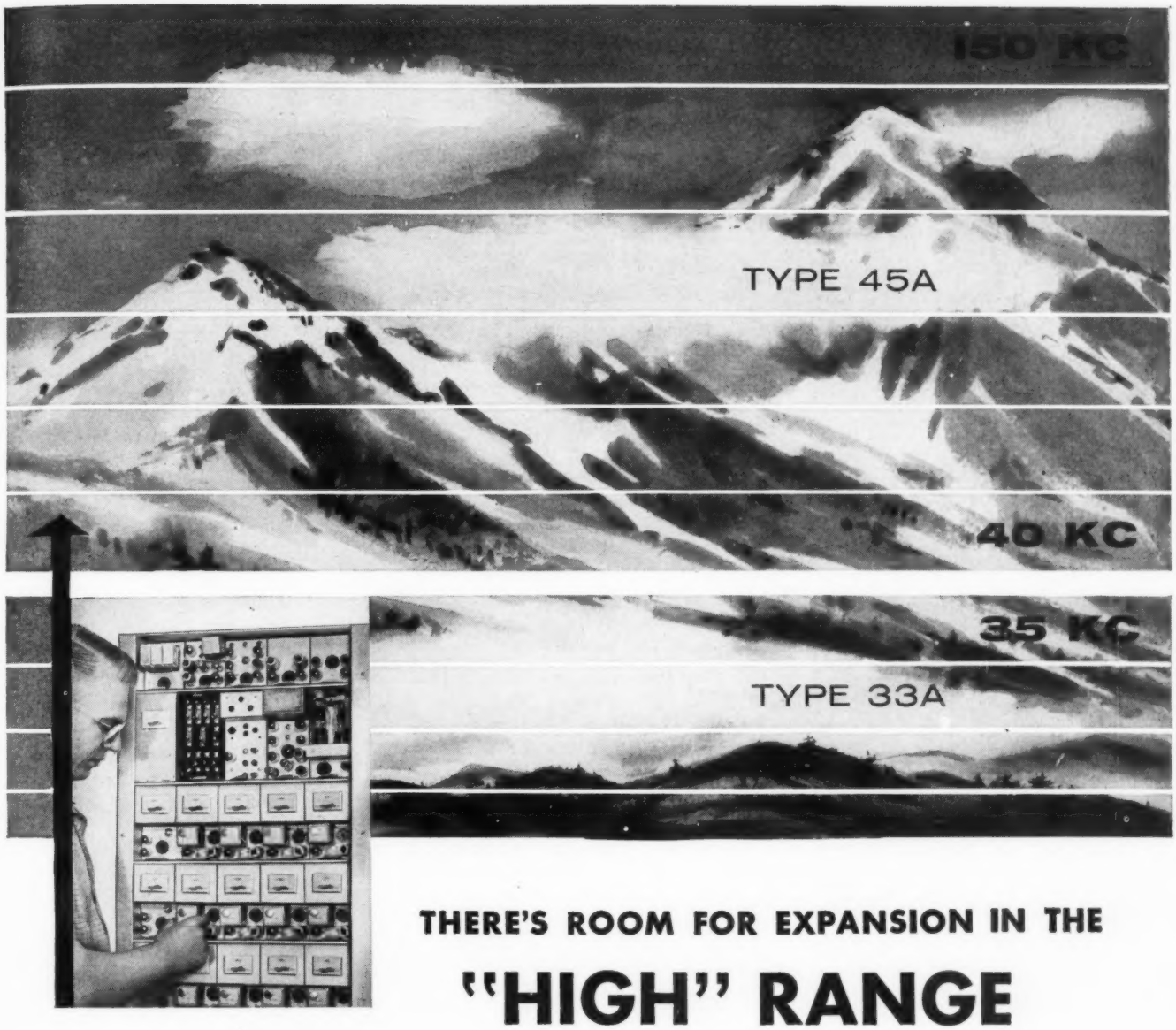
No. 7H6 with Dial Blank and straight line Biased Ringer .....$12.00 each
For Automatic Electric #24 Dial—add....$4.00 ea.
For Harmonic Ringers—add .....$1.00 ea.

TELEPHONE REPAIR & SUPPLY CO.

1760 W. Lunt Ave., Chicago 26, Ill.

Dan McNulty

Phone—ROgers Park 4-3817



THERE'S ROOM FOR EXPANSION IN THE

"HIGH" RANGE

A Lenkurt 45A Carrier System is your next logical step if you need to expand beyond the capacity of your present low-frequency carrier. Using Type 45A, you can add up to 12 channels above existing low-frequency systems. It's easy, quick, and inexpensive—and frequently requires no additional carrier transpositions.

Lenkurt's "carrier interconnection" concept—foundation of the 45 "universal" class of carrier systems—provides interconnection *at carrier frequencies*. Open-wire, cable, and radio systems can all be joined in one network, without expensive back-to-back equipment arrangements normally necessary.

Lenkurt Type 45A carrier also offers these advantages:

- *proves in over distances less than 15 miles in competition with new open-wire construction*
- *meets performance standards for long-haul systems*
- *coordinates with other long-haul systems*
- *convenient miniaturized components — plug-in sub-assemblies — simplified maintenance*

If you need high-frequency carrier, investigate Lenkurt Type 45A open-wire carrier. Write today for complete information. *Address:* Automatic Electric Sales Corporation, Northlake, Illinois, (FIllmore 5-7111). *In Canada:* Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

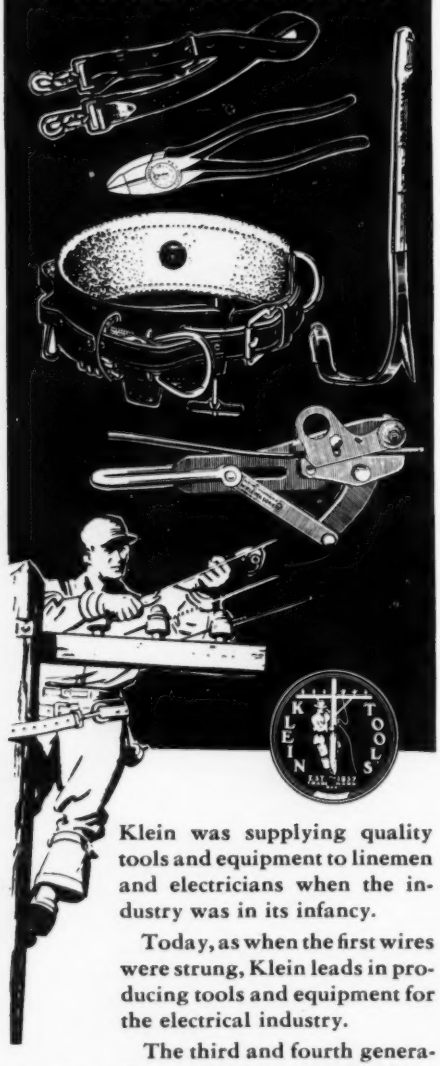
AUTOMATIC ELECTRIC

A member of the General Telephone System—
One of America's great communications systems

GENERAL SYSTEM

KLEIN

FOR GREATER SAFETY, BETTER PERFORMANCE



Klein was supplying quality tools and equipment to linemen and electricians when the industry was in its infancy.

Today, as when the first wires were strung, Klein leads in producing tools and equipment for the electrical industry.

1857 100 YEARS OF SERVICE 1957

The third and fourth generations of Kleins are still adhering to the quality standards set a century ago. The new Klein plant, equipped with the latest in manufacturing facilities, assures better, safer equipment, wherever power lines or communication lines are strung.

100 years of service to linemen, electricians and industry is back of this new Pocket Tool Guide No. 100. A copy will be sent to you upon request, without obligation.

Mathias Established 1857 KLEIN & Sons Chicago, Ill., U.S.A.
7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

ager, announces that effective July 1, F. M. Sholders becomes branch manager at Omaha.

F. E. Gibson, treasurer of Graybar, announces the following transfers in district financial personnel:

Effective Aug. 1, W. R. Pearson, district financial manager at St. Louis, transfers to Kansas City.

Effective July 16, T. W. McLaughlin, district financial manager at Minneapolis, transfers to St. Louis in the same capacity.

Effective July 1, H. V. Bell, division financial manager, Major Appliance division at Pittsburgh, transfers to Minneapolis as district financial manager.

Stromberg Names Carchedi To Publications Post

Anthony L. Carchedi has been appointed assistant publications editor of the telecommunication division of Stromberg-Carlson, a division of General Dynamics Corp., according to an announcement by Frederic W. Haupt, advertising manager of the telecommunication division.

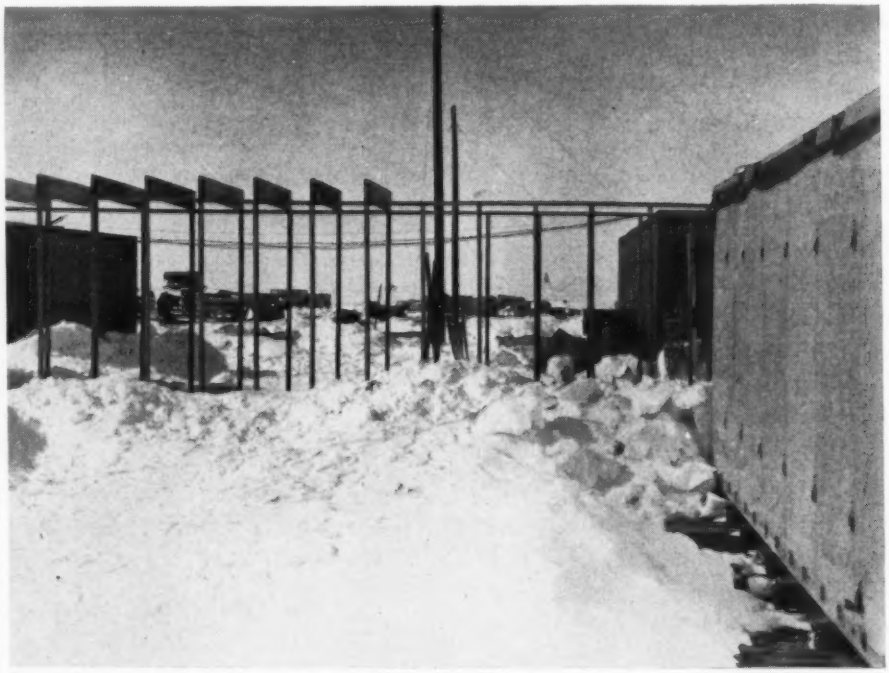
Mr. Carchedi joined Stromberg-Carlson from the Brunner Mfg. Co., of Utica, N. Y., where he had been assistant advertising manager. Previously he had been on the staff of the Syracuse *Herald-Journal* as correspondent for the Utica area.

A native of Utica, Mr. Carchedi was graduated from Utica College of Syracuse University with a B.S. degree in Public Relations. He is a member of Pi Delta Epsilon, national honorary newspaper fraternity.

A. L. CARCHEDI

From 1948 to 1952 Mr. Carchedi served an enlistment with the U. S. Navy, part of which time he spent in Hawaii as an instructor in aviation ground training devices.

At Stromberg-Carlson he will work with George B. Forbes, publications editor, in the general field of telecommunications news articles for trade publications serving this industry, and also will assist in the preparation of customer service materials.



Partially constructed tunnel in Antarctica showing Ansonia Wire & Cable Co.'s Ankoseal type 619 rural distribution wire strung from rafters, also from poles in background. Wood framework for tunnel will be covered with wire mesh and burlap, and drifting snow will eventually bury it entirely. Ansonia reports that, in "Operation Deep-Freeze," Ankoseal wire has also been used simply laid on the ground.

NOW **FROM GENERAL CABLE!**

alpeth

THE BEST PLASTIC TELEPHONE CABLE!

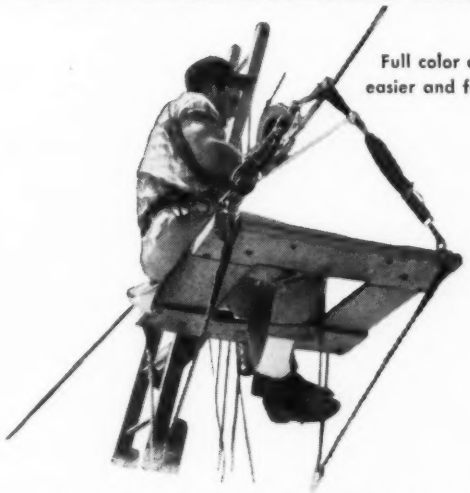
ALPETH SHEATH

Extruded high-molecular-weight, moisture- and weather-resistant polyethylene jacket.

FULL COLOR CODING

LOW RESISTANCE SHIELDING

Low resistance aluminum tape shield applied longitudinally. (In larger sizes, tape is corrugated to ensure flexibility.)



Full color coding means easier and faster splicing.

High-molecular-weight polyethylene insulated copper conductors.

Now produced by General Cable, with over 75 years of experience and know-how in manufacturing techniques!...fully color coded...all pairs guaranteed... Alpeth sheath of aluminum tape and polyethylene jacket...flexible in all sizes...truly modern plastic telephone cable!

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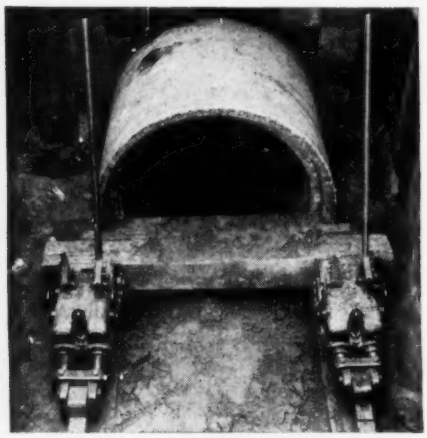
Here's the simple, cost-cutting way to install underground pipe. Speed your jobs with a GREENLEE Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, backfilling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes — model shown above for pushing 3/4" to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump (as shown above) also available for extra ease and speed of operation.



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Army, Lenkurt Sign Defense Training Agreement

The Army and a major telecommunications manufacturer signed an agreement for partnership in national defense training as Lenkurt Electric Co. assumed sponsorship of a U. S. Army Signal Corps reserve unit.

The affiliation agreement designates the San Carlos, Cal., firm as sponsor of the 396th Signal Company (Long Lines) stationed at Mountain View, Cal.

Maj. Gen. R. L. Howze Jr., Deputy Commanding General, Sixth U. S. Army, said industries and employers who allow their people time for ready reserve training "are contributing to national defense in a highly patriotic manner."

Further, the general said, "Those who contribute through affiliation with a reserve unit, as in this case, have added a high degree of efficiency to the patriotism, in that the unit is designed for technical operations so closely associated with the members' daily jobs.

"I express the thanks of the nation to Lenkurt Electric Co.," the general added.

General Howze signed the document with Col. S. S. Cerwin, Signal Officer, Sixth U. S. Army, representing the Army's Chief Signal Officer.

Signing for Lenkurt was President L. G. Erickson. He told the officers, "We recognize the vital need for rapid expansion of military communications in the event of a national emergency.

"By assisting the 396th Signal Company in its training and by welcoming the participation of Lenkurt employes as members, Lenkurt can help make it an effective unit ready for any emergency."

Commanding officer of the 396th is Lt. A. M. Seymour, Mountain View, a reserve officer who is manager of Lenkurt's technical services department. Several other Lenkurt employes are active in the unit.

Lieutenant Seymour is a member of the American Institute of Electrical Engineers, a senior member of the Institute of Radio Engineers, a member of the Armed Forces Communications Electronics Association, and a member of the American Society for Engineering Education.

A "Long Lines" company such as the 396th provides communications between major headquarters in a theater of communications, using either military or available commercial equipment for long-distance telephone and telegraph

The Army and a California electronics firm become formal partners in national defense as Lenkurt Electric Co., San Carlos manufacturer of long-distance telephone communications systems, is named sponsor of the 396th Signal Company (Long Lines), a reserve unit stationed at Mountain View. Signing the affiliation agreement for the Army are (seated, left to right) Col. S. S. Cerwin, Signal Officer, Sixth U. S. Army; and Maj. Gen. R. L. Howze Jr., Deputy Commanding General, Sixth U. S. Army. Standing are L. G. Erickson, president of Lenkurt, and reserve First Lieutenant A. M. Seymour, Commanding Officer of the 396th and manager of Lenkurt's technical services department.

CORDS BY Runzel

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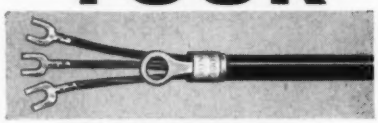

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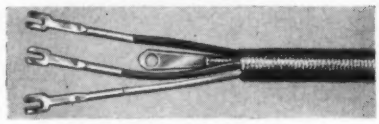

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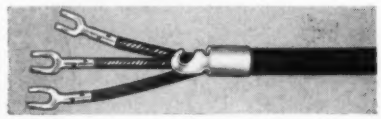

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NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

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transmission. As part of this mission it installs and operates carrier telephone facilities, wire lines, manual central offices and dial switching offices —a complete telephone system. The 396th is the only such reserve unit in the Sixth Army area.

Lenkurt specializes in carrier and radio equipment for long-distance telephony, and is the major supplier of this equipment to the Independent telephone industry. Its systems also are used by the government, railroads, pipelines and other industries in the Western Hemisphere.

The document signed in San Carlos describes the affiliation agreement as "a mutual expression of good faith, active interest and confidence . . . intended to express the voluntary plans of the parties with respect to their participation in the Department of the Army Affiliation Plan as a part of the National Defense Program."

Kellogg Appoints Ohio Sales Representative

O. C. Bailey, general sales manager of Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., has announced the appointment of William D. Watson as

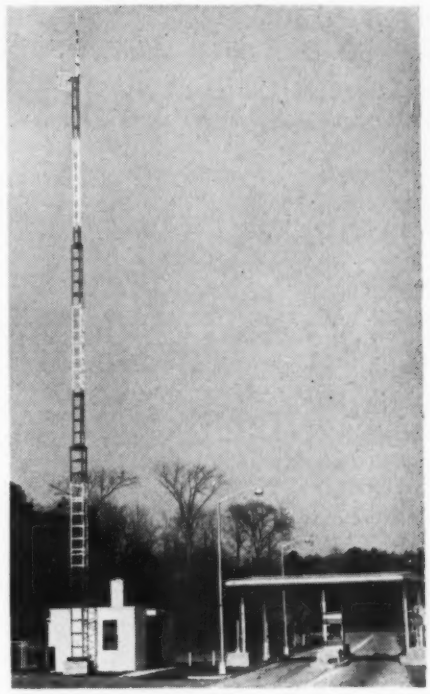
W. D. WATSON

field representative for the Western Ohio territory of the Central Sales Division. He will report to Norman W. Eckhardt, division manager, Mansfield, O.

Prior to joining Kellogg as an installation engineer in 1955, Mr. Watson spent four years with the Air Force, being discharged with the rating of Senior Airborne Radio Technician. He is a native of Detroit, Mich.

Sense of Purpose

"He who is firm and resolute in will moulds the world to himself."—GOETHE.



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Quick, expeditious handling of communications is assured year-'round by this clean, economical and dependable self-supporting structure.

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Available as straight uniform cross-section for short heights, graduated uniform cross-sections for taller use.

Call or write for details.

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Philco Appoints Fielding to Public Information Post

Appointment of Richard M. Fielding as manager of public information for Philco's government & industrial division has been announced by Henry F. Argento, vice president and general manager of the division.

It also was announced that Robert W. Fuehrer has joined the G & I division's public relations staff as publicity writer.

They will make their headquarters at the division's main plant at 4700 Wissahickon Ave.

In another announcement, it was stated that A. T. Pollock, manager of field engineering, assisted by Henry Hockeimer, supervises the installation, maintenance and warranty of products marketed by Philco's G&I division.

Mr. Fielding, who has been manager of public relations, is now responsible for the public relations, advertising and sales promotion activities for the division.

He was formerly sales manager and later advertising and sales promotion manager of Philco's TechRep division. Before joining Philco in 1950, he was manager of advertising, sales promo-

(Please turn to page 53)

Triple alliance in electrical industry—represented by the three men above—has been formed by the three companies with interest in Telecables & Wires, Ltd., Fort Garry, Manitoba, the first plant to manufacture telephone cables in western Canada. Attending the first annual meeting of the company in Toronto were (l. to r.) Sir John Dean from the U. K. company, the Telegraph Construction & Maintenance Co. Ltd.; O. W. Titus, president, Telecables & Wires Ltd. and Canada Wire & Cable Co. Limited, Toronto; and J. R. MacDonald, president, General Cable Corp. of the U. S.

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Working Alone
Can Identify
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Than 2 Men
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If He Uses
The Murphy
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SAVE time . . . money . . . manpower with Murphy One-Man Cable Tester. Thousands are already in use by progressive telephone companies all over the world.

MANY NEW PRODUCTS IN DEVELOPMENT STAGE

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ELECTRONIC RESEARCH DEVELOPMENT MANUFACTURE

MURPHY ENGINEERING LABORATORIES, Inc.

OVerland 2-4000

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tion and publicity for the record division of RCA Victor. Mr. Fielding is a native of Philadelphia.

Before going to Philadelphia in 1955 as a district representative for the Oil Industry Information Committee, Mr. Fuehrer worked on several daily and weekly newspapers in northeastern Ohio.

From 1951-54 he was press relations supervisor and editor of the plant newspaper at the Ravenna (O.) Arsenal, which is operated by the Firestone Tire & Rubber Co. for the Army Ordnance Corps.

A graduate of Kent State University, Kent, O., Fuehrer served with the 112th Infantry, 28th Division, in Europe during World War II. He is a native of Tamaqua, Pa.

M. C. Royalty Joins Staff Of Lenkurt Electric Co.

Marion C. Royalty has joined the commercial relations staff of Lenkurt Electric Co. as chief consulting engineer.

Although most of his nearly 25 years in the industry has been spent in toll

M. C. ROYALTY

transmission engineering, he also has engaged in teaching, laboratory work and sales engineering.

Mr. Royalty's career includes six years with General Telephone Co. of the Southwest in outside plant engineering, a year as instructor in electrical engineering at Texas Technological College, and three years on the Bell Telephone Laboratories technical staff in radar design and development.

Later he returned to General of the Southwest for nine years as a transmission and protection engineer, and recently spent nearly two years with

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Once you start using Alphaduct Drop Wire you will find out that the handy carton packaging has real dollars and cents advantages.

Not only does your wire arrive in perfect condition, but the sturdy carton protects it all the while it's in your warehouse.

The cartons are easier to handle than loose coils. They can be stacked higher without danger of falling and the wire on the bottom will not be crushed or bent. Space is saved, inventory taking is simplified, and the possibility of injuries to workers from tumbling coils is removed.

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line crews' EFFICIENCY
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Aluminum alloy housing reduces weight 21 pounds . . . full 10 ton lifting capacity maintained!

The new Simplex A1029 Reel Jack increases your men's efficiency by minimizing fatigue. Its lighter weight is a distinct advantage in loading, unloading and carrying to location, and its single-acting mechanism provides much easier lifting. Capacity 10 tons; weight 83 lbs. For reels up to 84" dia. Supplied with sturdy, laminated oak "T" base and 5' lever bar. Write today for full information.

Other SIMPLEX lightweight Leaders
A1538—Aluminum Pole Pulling & Straightening Jack; 15 tons cap., weight 63 lbs.
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Stromberg-Carlson as chief carrier—microwave sales engineer.

A graduate of Texas Tech with a BSEE degree, Royalty is a member of the AIEE and IRE professional groups on communications systems and engineering management, and Tau Beta Pi engineering honor society. He is a registered professional engineer of Texas.

Automatic Electric Move Now at Half-Way Mark

Automatic Electric Co. has announced that its move from Chicago to its new multi-million dollar plant and technical center in suburban Northlake, Ill., has reached the half-way point. Some 1,000 van loads of furnishings and stock have been moved on schedule and the company's sales and general offices have been completely moved into the new location.

Manufacturing facilities are being moved in reverse production line order, with a fleet of trucks to shuttle parts from departments still in Chicago to the new plant. The move is expected to be completed by about Oct. 1.

With the company's sales and general offices now located at Northlake, two new telephone numbers are being used by the firm. Those outside the city of Chicago should telephone Fillmore 5-7111. For the convenience of people calling from downtown Chicago, a local Chicago number, EStebrook 9-4300 has been established.

The Chicago supply warehouse of Automatic Electric will receive its mail at Northlake from now on, but will continue to use the HAymarket 1-4300 number as in the past.

Joins Reilly as Eastern Sales Representative

Robert K. Morgan has joined Reilly Tar & Chemical Corp., Indianapolis, Ind., as sales representative in the Eastern territory. He will work out of the company's Tuckahoe, N. Y. office.

R. K. MORGAN

Mr. Morgan has just returned from a tour of duty with the Navy. Prior to that he was a student at Fairfield University, Fairfield, Conn., from which he graduated in 1954 with a B.S. in chemistry.

Electric Storage Battery Makes Management Changes

Three top management changes have been announced by The Electric Storage Battery Co., Philadelphia. They affect the 69-year-old company's Exide industrial division, its Stokes molded products division and Jessall Plastics Inc., a wholly owned subsidiry.

Roland Whitehurst has been elected president of Jessall Plastics, of Kensington, Conn. A vice president and director of The Electric Storage Battery Co., Mr. Whitehurst will continue in Philadelphia as head of The Exide industrial division.

Monroe G. Smith has been named general manager of Exide industrial division, a position relinquished by Mr. Whitehurst because of his added responsibilities at Jessall. Mr. Smith also

Vacuum Tube Voltmeter
Audio Oscillator
Equalization Filters
ALL IN ONE UNIT

For Measuring the Characteristics of Microwave Relay Systems

DAVEN Transmission Measuring Set Type 12-B

EASILY PORTABLE

This unit provides the necessary information on transmission characteristics for the installation of terminal equipment, for the maintenance of terminal equipment, and for the field service of transmission lines and terminal equipment for microwave relay systems.

Filters are incorporated for providing response curves for accurate indication of 144, FIA or flat transmission lines. The 12-B also has provision for measurement of harmonic distortion and has its own self-contained low distortion 1000 cycle oscillator with variable amplitude. It has line blocking capacitors for use across central battery and dial telephone lines.

Write for additional specific information and for catalog material.

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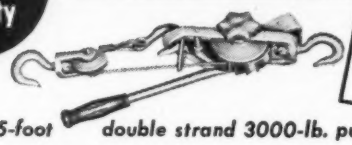
LIVINGSTON, NEW JERSEY
WORLD'S LARGEST MANUFACTURER OF ATTENUATORS

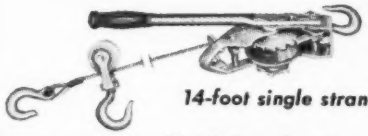
ACCO Quality

Wright Type "R" PULL-A-WAY



Write for Bulletin DH-163B

5-foot double strand 3000-lb. pull



14-foot single strand 1500-lb. pull

Weigh less than 9 pounds

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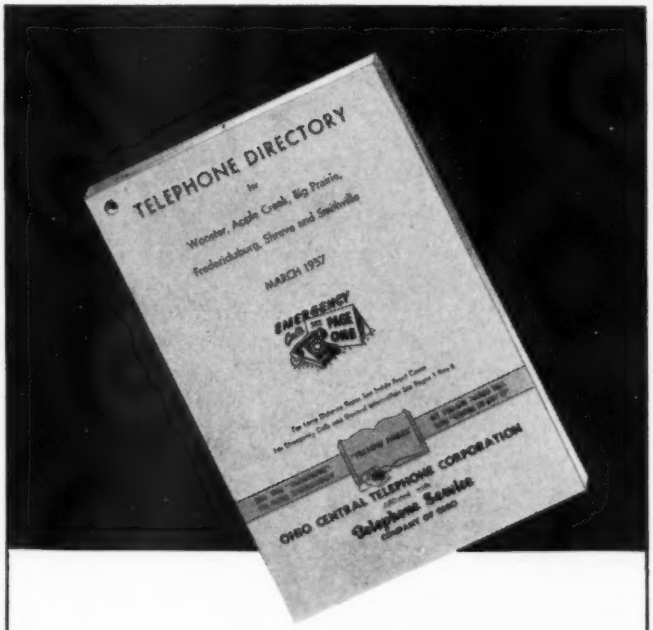

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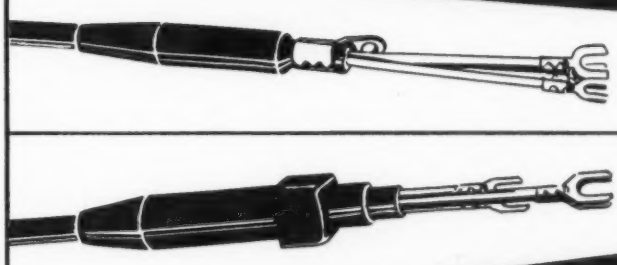

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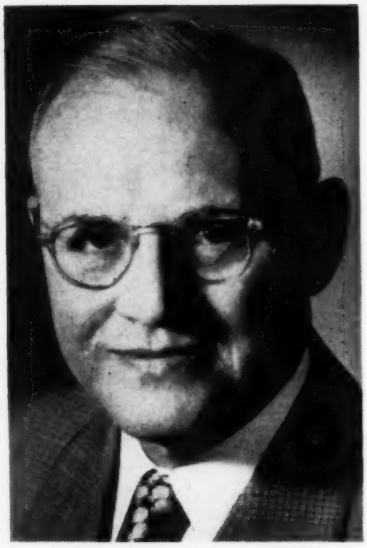


ROLAND WHITEHURST

continues as comptroller of the corporation.

At the same time, William C. Leingang, former assistant to the president, has been appointed general manager of Stokes, at Trenton, N. J. He will continue as a member of the management committee of the company.

The changes were made to strengthen the executive structure of the company, according to C. F. Norberg, president.

The Electric Storage Battery Co. manufactures storage batteries and related products for more than 300 industrial, automotive and military applications. The Exide industrial division produces the company's industrial and military battery lines. Jessall manufactures plastic extrusions. Stokes produces molded hard rubber and plastic products.

Mr. Whitehurst, a veteran of 49 years in storage battery business, joined The Electric Storage Battery Co. as an office boy in 1908. He became sales manager in 1942, vice president in charge of sales in 1948, a director of the company in 1951 and general manager of the industrial division in 1953.

He is a member of technical and trade associations including the National Association of Manufacturers, Industrial Truck Association, American Society of Sales Executives, American Institute of Electrical Engineers, American Society of Naval Engineers, Society of Automotive Engineers. He is a native of Manchester, England, and resides in Philadelphia.

Mr. Smith joined The Electric Storage Battery Co. as comptroller in 1955. He had previously been executive vice president of Rockwood & Co., Brooklyn, N. Y. Prior to that he had been president of The Silex Co., Hartford, Conn.

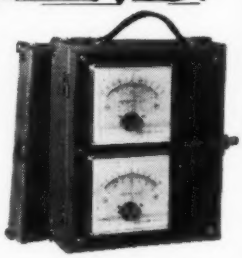
Stewart

TEST EQUIPMENT

Locates Trouble FAST

DUAL ELECTROLYSIS VOLTMETER

MODEL G



Double Meter for simultaneous readings. Zero center . . . no lead changing for fluctuating polarity.

VOLTMETER, 50,000 ohms per volt, .3 to 300 volts in seven ranges.
MILLIVOLTMETER, a low 2.5 Millivolt range . . . 2.5 to 500mv in 6 ranges.
Oak Case, 9"x10"x4½"—Wt. 6 pounds.

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XUM

A native of Haddon Heights, N. J., he was graduated from the Wharton School of Finance and Commerce, University of Pennsylvania, in 1933 with a bachelor of science degree in economics.

Mr. Leingang joined the company's Detroit sales office in 1923, shortly after graduating from the University of Michigan with a degree in electrical engineering. He spent six years as manager of the company's Chicago plant beginning in 1947, later was named assistant general manager of the Exide automotive products division. He became assistant to the president in 1955.

Mr. Leingang is a member of the American Institute of Management, Society for Advancement of Management and Society of Automotive Engineers.

Gould Appoints J. P. Kelly Industrial Sales Manager

The appointment of John P. Kelly as general sales manager of the industrial division of Gould-National Batteries, Inc. has been announced by M. W. Heinritz, vice president. Mr. Kelly had previously served as Detroit regional manager and will now make his headquarters at Trenton, N. J.

Mr. Kelly's promotion follows 12 years of experience in the industrial battery field with Gould in the Philadelphia and Detroit areas. He graduated in chemical engineering from Villanova College in 1938, worked successively as application sales engineer for the Worthington Pump Machinery Corp. and as a mechanical engineer for E. I. Du Pont de Nemours & Co., Inc. before he joined Gould in 1945.

Mr. Kelley is a charter member of the Philadelphia chapter, American Materials Handling Society, and a member of the Association of Iron & Steel Engineers.

Book Review

"TRANSISTOR CIRCUIT ENGINEERING" edited by Richard F. Shea, with contributions of eight additional specialists. 468 pages. $12.

The new book, published in May, combines basic theory with examples of its applications in typical circuits, and sets forth the tools that are necessary to do actual circuit designs and develop correct, usable circuits. Readily applicable to a variety of fields, the book shows how to build audio amplifiers, radio frequency amplifiers, oscillators, dc amplifiers, and other components, using available transistors.

How to combine these elements into systems such as radio receivers, television sets, and high fidelity audio systems is also related.

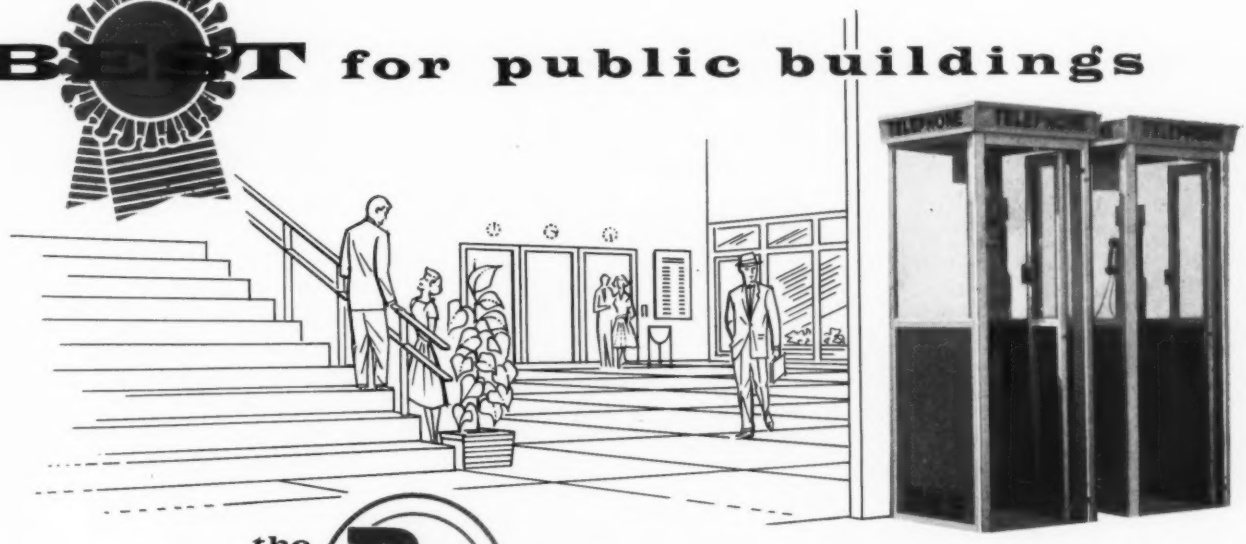
The chapter headings under which this material is organized consist of:

Characteristics and characteristic curves.
Equivalent circuits.
Bias and its stabilization.
Audio amplifiers.
DC amplifiers and their applications.
Tuned amplifiers.
Video amplifiers.
Oscillators.
Modulation, mixing, and detection.
Transient response and pulse circuits.
Systems and special circuits.

The authorship, representing what the publisher terms a vast combination of knowledge and experience, includes: Wood Foung Chow, Sorab K. Ghandhi, Edward Keonjian, Vernon P. Mathis, Donald A. Paynter, John A. A. Raper, Arthur P. Stern, and Jerome J. Suran. All are in the electronics laboratory of the General Electric Co. in Syracuse, N. Y. Mr. Shea is in the company's Knolls Atomic Power Laboratory.

This book may be purchased through TELEPHONY.

BEST for public buildings



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F. S. SWETT

G. E. LENZ

AE Transfers Three Engineers to Field

Automatic Electric Co. has announced the transfer of three carrier and microwave radio engineers from its Chicago offices to assignments in the field.

F. S. Swett and Gerard E. Lenz have been assigned to the Atlanta, Ga. office and James G. Strickland has been transferred to San Francisco.

Mr. Swett was with Western Electric Co. for 10 years before joining Automatic Electric as a staff engineer in 1952. Mr. Lenz, who joined the company at about the same time, also had about 10 years previous experience with Western Electric, the New York Telephone Co. and the Creole Petroleum Co. in Venezuela.

Mr. Strickland, who joined the company in 1956, was employed by American Telephone & Telegraph for about nine years.

J. G. STRICKLAND

Savings Are Essential

"There is only one source to which industry can look for capital assistance . . . and that is the savings of thrifty people. It can convert these savers into investors only by offering a living wage for money hired out. This is a point which ought to be kept in mind by those who formulate the nation's tax policies, because taxes which penalize progressive and prosperous enterprises—and doubly penalize their investors—dry up the sources of equity capital. Ultimately that must mean a loss in tax revenues far greater than anything gained by excessive taxing now."—W. ALTON JONES, *chairman of the board, Cities Service Co.*

No Such Easy Analysis

"This injection of emotional yardsticks into the rugged field of competitive business is a breeder of misconceptions. It would be hazardous indeed for the 'common man' to invest his funds on the basis of such illusory generalizations. In today's world of business, neither bigness or littleness is a guaranty of success." — M. S. RUKEYSER, *Columnist.*

Place to Economize

"By its nature, big government is unwieldy. The systems follow an entrenched design and it is difficult to get them out of the ruts. On the average, for example, government writes a billion letters every year to itself and to the public at a cost of $1 each. A great many of these letters could be eliminated by eliminating the reports the letters concern."—EDITORIAL STATEMENT, *The Wall Street Journal.*

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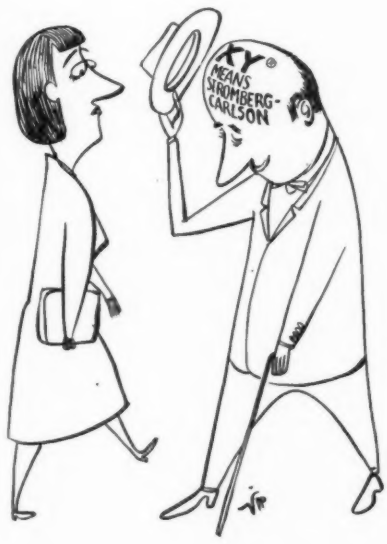

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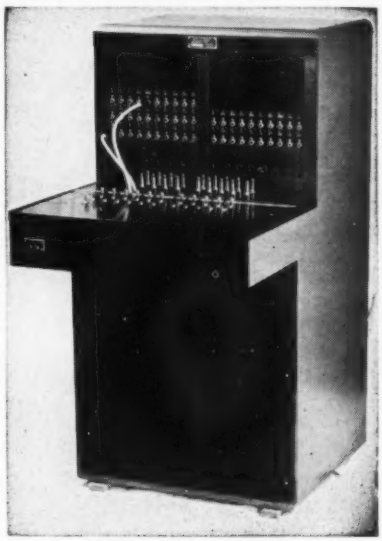

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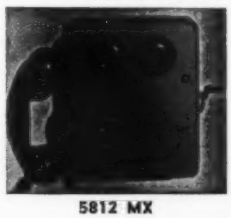

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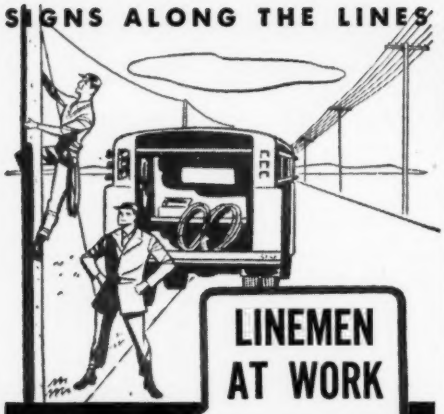

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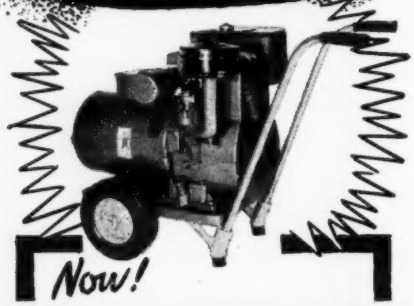

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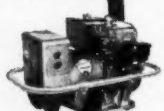

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XUM

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